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ON THE

TREATMENT OF THE DISEASES

OF THE

PROSTATE GLAND.

PRACTICAL OBSERVATIONS
ON
THE TREATMENT OF THE DISEASES
OF THE
PROSTATE GLAND.

ILLUSTRATED BY COPPER-PLATES.

TO WHICH IS ADDED,
A LETTER FROM PROFESSOR BRANDE TO
THE AUTHOR,
ON CALCULI,

From the Philosophical Transactions.

BY
SIR EVERARD HOME, BART. V. P. R. S.


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TO THE
RIGHT HONOURABLE
LORD GRENVILLE,
CHANCELLOR OF THE UNIVERSITY OF OXFORD,
&c. &c. &c.

MY LORD,

It may appear to require some apology before I offer to dedicate to your Lordship a Treatise on Practical Surgery : I shall therefore give

your Lordship the following reasons for doing it.

The first volume of the present Work is dedicated to Sir Joseph Banks, as the Patron of Medical and Chirurgical Science in this country. It is my wish that the second should be dedicated to your Lordship, as the Patron of the Royal College of Surgeons in London.

It was the wise and enlightened policy of your Lordship's administration, to procure a grant of money from Parliament, for building the Museum of our Royal College in

Lincoln's-Inn-Fields, in which is deposited the Hunterian Collection, and to add a Theatre in which the doctrines of Hunter are promulgated, your Lordship well seeing the advantages the Public would derive from such an establishment.

As an Executor of Mr. Hunter, a Trustee of his Collection, and a Member of the College, I am desirous, in the present Dedication, to make known the grateful feelings of the Members of the College towards your Lordship, and to express my own obligations.

I am equally desirous that your Lordship should be fully satisfied that we are not idle, but are using our utmost endeavours to diminish the sufferings of humanity, both by our professional exertions, and by putting upon record the results of our experience.

I have the honour to be,

MY LORD,

Your Lordship's much obliged,

most obedient Servant,

EVERARD HOME.

Sackville-Street,

March 2, 1818.

LORD GRENVILLE, in complying with my application, has expressed himself so warmly in favour of Science, that I am desirous sentiments so becoming a great Statesman should not be withheld from the Public.

*Hamilton-place,
March 4, 1818.*

MY DEAR SIR,

I cannot but be most highly gratified by the honor which you propose to me. At the close of a long public life, there are few parts of it on which I reflect with more satisfaction, than on the opportunities which I have had of promoting in any degree the interests of Science, and particularly of that branch of it which is most immediately interesting to the cause of humanity; and

it will be no small pleasure to me, to see my name in any manner associated with your distinguished labours in that province.

I have the honour to be,

Dear Sir,

Most truly and faithfully yours,

GRENVILLE.

To Sir Everard Home, Bart.

No. 80, Sackville-street.

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INTRODUCTION.

SUCH is the extent and variety that is met with in almost every disease to which the human body is liable, (arising from the same disease not affecting the organ to which it belongs in exactly the same manner, or in the same degree in any two patients), that no medical practitioner, however extensive his practice, and however long he may have continued in it, has had opportunities of observing any one disease in all the various forms in which it has occurred.

This single truth is, in reality, the cause of young practitioners who have seen a few cases of any malady successfully treated,

becoming bold in their practice, and sanguine over much in their opinions ; while those who have spent the best of their days in the field of experience, have met with so many disappointments, and have been so often deceived by the most unexpected varieties in the morbid changes produced, and the symptoms they brought on, that after all their experience, they can hardly recognise the different cases they have met with to belong to the same disease, so different were the modes of treatment required to produce a cure. Experience then too often produces timidity, irresolution, and distrust in the efficacy of medicine, which renders the mind incapable of continuing to prosecute medical science ; and the practitioner falls into a state of apathy, in which he is satisfied with doing his best endeavours to palliate the symptoms respecting which he is consulted.

This effect of experience must continue

to occur till there are upon record, a sufficient number of facts explanatory of the principal morbid changes that have been met with in all the more important diseases of the human body, to enable the medical student in the outset of his practice, to have enlarged notions respecting them, and his mind so amply stored by the knowledge which his predecessors had acquired, as to prevent him from being too sanguine at first, and too irresolute in the maturity of his experience.

As the experience of one man can do but little, and that little is so rarely communicated to the public, it would be a work of inestimable value, were it well performed, to collect into one view, under regular heads, all the dissections of morbid bodies that have been handed down to us by men of knowledge and reputation, to be consulted as a dictionary of morbid anatomy, which from time to time, might be extended

so as to keep pace with the progress of medical science.

These observations cannot be considered as out of place, when introductory to the second volume of a work upon the morbid changes which the portion of a gland undergoes, in itself so small as to have had its existence overlooked, and might have longer continued unobserved, were it not for the changes to which it is liable when diseased.

In the first volume I had succeeded in collecting and bringing into one regular series, a great variety of the diseased alterations to which it is liable, all of them having fallen under my own observation; these were so numerous, that I had little expectation during my professional career, to be able to add to their number; and yet in the short period of six years, I have met with no less than eight different varieties, fully as instructive to the practitioner who

is called upon to relieve the symptoms of this disease, as any in the former volume.

In publishing them, I am acting up to the precepts which I have prefixed to them, and feel confident, that the young practitioner will, by an acquaintance with the engravings, even without the observations by which they are accompanied, be better able to take charge of patients labouring under disease in this gland, than he could have been without such knowledge.

As this is a disease rarely met with, except in the last period of life, from that circumstance, even when the symptoms of the disease are removed, and there is no future return of them, which must be considered a cure, still as it is the lot of humanity, that life cannot be carried on beyond its usual limits, we have more frequent opportunities of ascertaining the state in which the parts are left after death, than occur in many

other diseases that have been successfully treated.

As the middle lobe of the prostate gland does not come within the reach of examination, we have only the symptoms, and the state of the lateral portions acquired by examination per anum, as our guide: this makes it more necessary to have engravings in which the different stages of the disease, and the various forms it puts on, are represented; and indeed without such assistance, any work upon this subject would be scarcely intelligible to the experienced practitioner, much less so to the student in surgery.

It must ever be kept in mind, that this disease consists of an enlargement of a natural part, and is not altogether the creature of disease, as all tumours must be considered to be, and therefore in the earlier stage of its increase in size, we have reason

to expect, that a stop may be more readily put to its enlargement, and even a reduction in a greater or less degree brought about, than in tumors to which it bears a very close resemblance, although by no means of the same class of diseases. When the middle lobe has arrived at a great size, and has long continued so enlarged, the chance of reduction is at an end.

ON THE DISEASES OF THE PROSTATE GLAND.

CHAPTER I.

ON THE CAUSES OF ENLARGEMENT OF THE MIDDLE LOBE OF THE PROSTATE GLAND.

IN treating upon this subject in the first volume, I mentioned several of the apparent causes, but was not aware, at that time, that the slow return of the blood from the neck of the bladder, arising from the disadvantageous situation of the veins respecting the heart, must, in advanced life,

have a tendency to dilate them beyond their natural size, and therefore render an accumulation of blood in these veins, more readily produced, than in many other parts of the body. This natural circumstance must give a tendency to disease, which will be greatly increased by violent horse exercise, and I find, that many of the cases which have come under my observation, and those in which the enlargement had taken place in the greatest degree, have been in patients who had indulged to excess in hard riding, at the same time that they were induced by the appetite it produced, to make free with the pleasures of the table. I am now so much convinced of the bad effects of these habits upon the prostate gland generally, and upon this lobe in particular, in advanced periods of life, that I set them down in my own mind as the most common causes of the disease, without which, it would not, in many of the individuals, have

taken place. From horse exercise, in one case having produced a rupture of a vein near the external surface of the middle lobe, there is reason to believe, that the morbid increase in size, may be the consequence of the rupture of some of the smaller vessels in its substance: if this should be true, there will be a great analogy between this complaint and apoplexy, both of them arising from the rupture of vessels in the internal parts of glands, and most commonly taking place in the more advanced stages of life, in which the blood vessels are found more readily to dilate, and to give way when any unusual force is applied to them.

It is a curious circumstance, and one that deserves to be put upon record, that as the cases in which the middle lobe, and also the lateral lobes, have been found to project into the bladder in the greatest degree, and had acquired the largest size;

were from patients who had indulged in horse exercise more than is usual ; so on the other hand, the cases in which the middle lobe, after having sufficiently increased in size to produce suppression of urine, has remained stationary, or nearly so, till the person's death, have been in patients with strictures in the urethra, that had never been removed, only palliated from time to time, by the use of small bougies. This has so frequently occurred, under my own observation, that I can have no doubt of the truth of the remark. The mode of explaining it, which has occurred to me is, that in the early stage of the enlargement of the middle lobe, when the urine has escaped from the bladder, and arrived at the stricture, it is stopped there, and the urethra being filled to that part, the pressure upon the outer side of the lobe counteracts the pressure on the other, so that the effort to get rid of the water, or

at least the great strain, is not made there, but at the stricture, and while that is the case, one of the great causes of enlargement is not in force.

CHAPTER I.

ON THE CHANGES OF ITS FORM IN CONSEQUENCE OF ENLARGEMENT.

IN the former volume, I explained the general enlargement of the middle lobe, and the effects that were produced upon the neighbouring parts, as far as they had come to my knowledge; since that time I have seen it put on other appearances which are deserving of being known to the practitioner. One of these is where its increase appears to go hand in hand with that of the two lateral lobes, so that there is no passage either on the one side or the other, the whole of the projecting gland into the bladder, forming a rampart of the form of a curve, the hollow side next the verumontanum, the convex side next the bladder.

When it enlarges in this way, the middle line of the urethra is that in which a catheter will most readily come at the bladder. It is illustrated by Plate II.

It becomes a question, whether the middle lobe, or the membrane which covers it, ever ulcerate, except from being wounded and abraded by the mismanagement of the instrument in its introduction, or a stone in the bladder; but it is a very satisfactory circumstance to know, that when that effect is produced, it does not give a disposition to an increase of the size of the part, which it would be very natural to expect, and which generally takes place in tumours; it must therefore be attributed to its being the portion of a natural gland, that it is not the case here; and I confess, that when I published the former volume, although I knew this to be a natural part only enlarged, still so much has it the appearance of a tumor, that I fell into the error of believing, that its increase would be

accelerated by the same causes that hasten the enlargement of tumors, one of which arises from their having a power of growth within themselves, therefore the larger they become, the faster will be the increase of their growth. This is by no means the case with this lobe : it shall increase to a certain size, and then stop, and never after become larger ; a circumstance it is very desirable to be acquainted with.

If it prove true, that the enlargement of this lobe arises wholly, or even in part, from the extravasation of blood or lymph into its substance, in consequence of rupture of vessels, it will then be easily explained, that the increase, when once begun, shall stop, and the size shall remain stationary in some instances, and in others, that the extravasated fluids shall be absorbed, and the part restored to its natural size. These beneficial effects cannot, however, be expected to take place if the

injured gland is not relieved from all unnecessary pressure, and allowed to remain in a state of tranquillity, while these salutary processes are going on.

With a view to ascertain whether the increase of size of the gland arises from a preternatural growth of the whole substance, similar to an enlargement of the spleen or liver, or the result of ruptured vessels pouring out their contents, in different quantities at different times, and the blood or coagulable lymph thus thrown out, becoming solid, and making so many distinct additions to the general bulk, I dissected an enlarged prostate gland, which appeared, from many circumstances, to be peculiarly fitted for such an examination. It was very large both in the middle and lateral lobes, the substance was soft, and to the feel of an uniform texture, and it appeared to be made up of a greater number of distinct parts than I had ever seen before.

The whole of the facts will come more distinctly before the reader, by first giving the history of the symptoms, and then the dissection.

CASE I.

A. B., 70 years of age, was seized with a suppression of urine upon the 14th of March, 1817, having for several months previously complained of a difficulty in making water. The bladder was emptied by a catheter being introduced, but the power of passing the urine naturally, was not restored, and it became necessary to draw off the water whenever the pain from distention was produced. After doing so five times the surgeon failed in passing the instrument, and decided upon puncturing the bladder through the rectum. This operation gave immediate and complete relief. The canula was kept in the bladder, and the urine passed readily through it. On the fourth day after the operation the canula slipped out, but when the bladder

was distended, the wound opened, and the water passed out at the rectum. Under these circumstances, in a few weeks he made water by the urethra, and the wound in the bladder healed up. He continued to make water with tolerable freedom till December : in this month he experienced a return of difficulty in emptying the bladder, but not to such a degree as to require the use of the catheter. In the beginning of January, 1818, he was attacked by an inflammation in his bowels, of which he died.

On examining the prostate gland after the patient's death, the middle lobe appeared to be made up of three oval portions, nearly of the same size, all of them projecting equally into the cavity of the bladder ; besides these, there was another oval portion on the left side, extending down towards the verumontanum, although at some distance from it ; on the outside

of this portion, between it and the lateral lobe, was a sulcus of considerable depth.

There was also a small detached portion, not much larger than a garden pea, included in the membrane covering the middle lobe, but not even in contact with it, although lying upon it; near the verumontanum there was a smaller one of the same kind.

The lateral lobes had the sides which oppose each other, very much rounded, and their surface, instead of being uniform, as we usually find it, was made up of a number of small protuberances.

Having described the external appearances of this prostate gland, in which so many peculiarities have been taken notice of, and are represented in Pl. III., I shall now mention what I observed in its internal structure.

Upon making a longitudinal section in the longest diameter of the middle lobe,

there was found in the centre, or nearly so, a rounded, soft, somewhat spherical, substance, uniform in its texture which approached nearer to that of pulp than fibres: this was surrounded towards the apex by concentric lines of a similar structure, giving the appearance of having been formed after the nucleus, if I may use that term, as they were less compact and softer. On the left side it was found, that in making the section, a large artery had been laid open for a quarter of an inch in length, in which there was a coagulum of blood: on looking on the opposite side, the corresponding vessel was so much smaller as to be with difficulty distinguished, and was empty. These two arteries were passing almost on the outside of the gland itself, being just within the external covering. It is also to be remarked, that it was on the left side of the middle lobe that there was so large a portion of newly deposited substance.

The structure of the two small detached portions, when divided, resembled exactly the central part of the middle lobe.

The lateral lobes, when cut into, were found to be made up of a number of nodules, like that in the middle lobe : they were so loosely connected with one another, that they might have been separated by dissection : their internal structure was in all the same, and like that already described ; the projections seen externally, were small portions of the outer surface of these nodules, pressing against the general covering in which they were all contained.

The nodulated structure met with in this Case, and which also occurs in some instances of the pulpy enlargement of the testicle, I have had an opportunity of comparing with the structure of a tumor which was extirpated from behind the angle of the lower

jaw, under the following circumstances. A stout young man, who had a tumor formed in that situation, which had gradually increased to the size of a pullet's egg, went to Vauxhall, and after drinking freely, got into a fray: in the scuffle, he received a violent blow with a stick upon the tumor, which immediately became larger, and instead of subsiding to its usual size, as he expected it would, continued to enlarge, and this so rapidly, that in a fortnight, it had doubled its former size. This gave him no small alarm, and induced him to have it extirpated. When removed, upon making a section of it, there was this remarkable circumstance—that one half of the cut surface was black, the other white, and the line of separation was as straight as if it had been drawn by a rule. On account of this circumstance, it was preserved in spirits.

This preparation, which was made thirty

years ago, occurred to my recollection in considering the present subject, as one, the examination of which would enable me to decide the appearance that is given to the internal structure of a tumor which is suddenly very much enlarged by extravasated blood, in consequence of a violent blow upon the part; for there can be no doubt that the black colour, which is still preserved, was derived from the colouring matter of the blood, and that the rapid increase of the size of the tumor, was in consequence of extravasation of blood; and the vessels not having closed, the tumor had continued to increase till the operation was performed.

Upon looking at the cut surface which divided the black portion of the tumor into two equal parts, it had the same appearance of sections of nodules that I have described to have seen in the lobes of the prostate gland.

This evidence, as far as it goes, confirms the suspicions I had entertained, that the internal changes in the structure of the gland are produced by extravasation from rupture of vessels in different parts of its substance, and that the increase in size is more or less rapid, according as the vessels are larger or smaller, carrying red blood, or only the thinner parts of the blood.

CHAPTER III.

ON THE SYMPTOMS PRODUCED BY ENLARGEMENT OF THIS LOBE.

IN the former volume, I have described so many of the symptoms which occur in this disease, that I had little room to expect that any opportunity would occur of seeing new ones, and yet one of the most important to which it is liable, had not come fairly under my observation : this is hæmorrhage from sudden pressure. This symptom, which is produced by riding on horseback, will be seen illustrated by Plate I., and the account of the case. This symptom it was difficult to understand during the patient's life-time, not being aware that such an effect had ever taken place ; but now it is made known, since the hæmorrhage only comes on after using such exercise ; that when

the blood comes forwards, it is little mixed with the urine, and coagulates ; and that when it follows the urine, that secretion is clear, and it is only the latter portion that is blood, which falls readily to the bottom of the vessel, circumstances which do not occur when hæmorrhage takes place, from the coats of the bladder, in consequence of fungous excrescences projecting into its cavity, as will be seen in the annexed case, which is purposely inserted after cases of hæmorrhage, from the middle lobe, the better to enable the reader to mark the distinction between the symptoms.

I attach so much importance to this symptom, and the light which I consider it to throw upon the nature of the complaint, as well as upon the treatment, that had I no further information to bring forward upon the subject, I should have thought myself called upon to lay my observations upon it before the public.

Inflammation, and even ulceration of the membrane that covers the middle lobe, is an occurrence more frequently met with than I was aware of: this, however, I do not believe forms any part of the progress of the disease, but must, I am sorry to say, be brought on by the want of delicacy in introducing the instrument into the bladder.

It is this state of inflammation or ulceration, that produces the burning heat at the neck of the bladder, great pain and distress while passing the instrument, which continues all the time it is retained there, and is sometimes attended with spasms, which make it necessary to remove it, and when that is done, the pain shall continue for ten or fifteen minutes.

Even when no instrument has been introduced, and consequently no inflammation has been brought on by that cause, the surface of the middle lobe, and of the

surrounding parts, shall be in so exquisitely tender a state, that the passing a flexible gum catheter without a stilet, in the most delicate manner, shall disturb them so much, that when the attempt is made a second time to introduce it, so much spasm shall be brought on as to prevent the success of the operation.

CHAPTER IV.

CASES IN WHICH THESE SYMPTOMS OCCURRED.

WITHOUT giving the cases themselves, it is impossible to make a young practitioner master of the information which it is necessary that he should learn: these should not, however, be thrown together in heaps, or given indiscriminately, but one or two selected, in which the principal symptoms are the most prominent, and most clearly distinguished.

I have, in my work upon Strictures, stated cases to point out what symptoms were liable to occur in the treatment, and therefore, although they were rarely met with, were still to be within the scope of the practitioner's knowledge.

Upon the present occasion, in treating

upon a disease in which the symptoms, if not early attended to, increase rapidly, and prove fatal, it is peculiarly necessary to state all the fatal consequences of delay, by showing the mischief that is produced by it.

SECTION I.

Cases of Hæmorrhage from the Middle Lobe.

CASE II.

A GENTLEMAN, 55 years of age, complained of making bloody water after riding on horseback, without any other symptom of disease. For this complaint he consulted me. The urine always came first, and after it was all evacuated, the blood followed of a dark colour, and fell to the bottom of the vessel, so that it appeared to issue from the neck of the bladder. Upon enquiring into his habits of life, I found that his great passion was riding, taking journeys on horseback of 100 miles, merely for pleasure, so that any interference with his favourite amusement was very irksome to

him, and I was unable to induce him to leave it off; and no other means employed had any effect in preventing its recurrence. In the course of four years, it was found to increase in quantity: this led me to sound the bladder, but no stone could be felt; in other respects he enjoyed very good health, and persevered in riding round his farm, not giving much attention to a symptom he was so much accustomed to. At the age of 59, while in the country, after riding longer than usual, the bleeding was more copious, and a considerable quantity was supposed to have been retained in the bladder, as a suppression of urine came on, but the urine came away involuntarily in small quantities at a time, mixed with blood. The lower part of the belly was very tense, and felt very hard, but he could not be persuaded to allow any medical person in the country to pass an instrument into his bladder, for although he

could not pass any water voluntarily, a great quantity oozed out as he lay in bed, without his having any knowledge of it, which prevented the bladder from being distended in a greater degree, keeping it exactly in the same state.

In about a fortnight the symptoms went off; his water, which had always been bloody, came away naturally in small quantities, and became clear; but it was the opinion of his medical attendants, that the bladder, at this time, had never been completely emptied. In about seven days he had a relapse, and came to London. Upon his arrival, on the 17th of January, 1817, I was sent for, and when I saw him I was struck with a great change in his appearance. He was very much weakened, had lost his memory, had a degree of irritability about him, which appeared to form a part of his complaint. I drew off three pints of water with a flexible gum catheter,

without the stilet. When the bladder was emptied, the pain was extreme, so as to make it necessary immediately to withdraw the instrument : this pain did not subside for a quarter of an hour. Instead of receiving the relief which usually attends emptying the bladder, his whole constitution continued in a disturbed state ; his great complaint, which he was constantly reverting to, was loss of memory, unable to recollect all the things he intended to tell me of. On the 18th, I attempted to draw off the water again in the same manner as before, but did not succeed, and as there was no tension of the bladder, nor urgency to make water, I desisted from any further attempts. On the 19th, by using a catheter of an unusually large size, I succeeded, and was so much struck with the smallness of the quantity, that I sent for a graduated glass to measure the quantities drawn off in future, attributing the

general indisposition to the scantiness in the secretion of urine, having seen the same effect in other cases. For the first few days, it was only a pint in twenty-four hours, but in ten days, gradually increased to three pints, and a few ounces. Along with this increase of the urine, his constitution appeared to recover itself; he became more manageable; his memory improved; his appetite, which all along had been very bad, was mended: but all at once, the quantity was only a few ounces; his countenance changed; he became almost totally insensible, unable to take food or medicine, appeared to express great pain in the region of the bladder, which was interpreted into a desire to make water; but when the instrument was introduced, only a few ounces of a wheyish coloured fluid were brought away. He fell into this state on the 8th of February, and on the 9th, his pulse became so small, that it appeared to be the approach

of death, but he continued to linger on, apparently in great pain and irritation, through the 9th and 10th, and during this period, no urine passed from the kidneys into the bladder, and on the morning of the 11th he died.

On inspecting the body after death, the urinary bladder was found empty; the middle lobe of the prostate gland was enlarged, spreading out unusually at the end; the lateral lobes were very large, and rounded on the surfaces opposed to each other. On examining more particularly the projecting portion of the middle lobe, there was a small rising upon it, the size of half a pea, and at this part was readily distinguished a ruptured vein filled with half coagulated blood. This appearance went off when put into water. Vide Plate I.

The kidneys, externally, had nearly the natural appearance, and when laid open,

the cortical part had undergone little or no change, nor was the radiated fibrous structure at the bases of the *mammæ* much altered; but these processes had lost the round turgid appearance, natural to them in health; they appeared flattened and shrunk.

There can be no doubt, that during the time he had the suppression of urine in the country, which was only relieved by an involuntary passing of water, the pelvises of the kidney had been so much loaded with urine, which pressed with such force upon the *mammæ*, as to interfere with the regular secretion of these glands, and the want of this secretion was the cause of all the constitutional symptoms, and ultimately, of the patient's death.

The convexity of the surfaces of the two sides of the prostate gland, prevented them from being brought into contact, but by a small surface, and the middle lobe being

equally rounded, it did not form a complete valve, but left a space on each side, along which the urine passed, so that in the earlier stages of the disease, he was never liable to suppression of urine, as in other cases of this kind, and even after the blood had got into the bladder, while he lay in a horizontal posture, and the middle lobe was not pressed forward, there was a constant leakage going on.

These are circumstances in this disease that do not commonly occur, and it is therefore very important that they should be known; but what is most curious in this case is, the bleeding, which only happened after riding, being evidently produced by that exercise rupturing a vein near the surface of the middle lobe, the orifice of which readily healed when the pressure that horse exercise occasioned, was taken off. This shows what I was not before acquainted with, that the jolt produced in

riding, is communicated directly, with considerable force, to the neck of the bladder, and when the middle lobe is enlarged, it is immediately affected by it, even when the horse is going at a slow pace.

CASE III.

THE following statement has been in my possession for the last fifteen years, but at the time I published my first volume, never having met with an instance in which a blood vessel had been known to be ruptured in any part of the prostate gland, except from the abrasion produced by the injudicious use of instruments in attempting to force a passage into the bladder, and in these cases the bleeding in general is only in small quantity, I could not determine from what part the blood, in the present case, had issued ; but I have now no doubt of its having come from the middle lobe of the prostate gland : this case bears so close a resemblance in all the leading circumstances, to that which precedes it, that I have thought it right to insert it in this place. The account is so clearly stated,

that I have not ventured to make the smallest alteration in it.

July 16th, 1802.

“ On the 1st of last February, a gentleman was riding slowly along the road ; he had occasion to get off his horse to make water, which, to his great surprise, appeared to be blood instead of urine. About half an hour after this, he called upon me, (who am his apothecary). I desired him to sit down awhile, that I might have an opportunity of knowing, when he had another motion to make water, whether it would have the same bloody appearance again. He soon had a motion to do so, and eight or ten ounces of genuine red blood came away in a full stream, without any pain, as from an orifice made in the arm in the operation of bleeding. He had had no fall, no violent exercise, no one symptom of disease in the urinary passages previous to

this event, nor had he ever in his life, the gravel, the stone, or the gout. He is rather, I think, of a scorbutic habit ; has sometimes been subject to eruptions on the arms and thighs, and to rheumatic affections. I visited him the next morning at his own house, and found him feverish, and he had not made a drop of water, but much had drained away, tinged with blood, in the night, so as to wet several thick cloths through. As he was in bed, I could examine the abdomen, and felt the whole region of the bladder full and tense. I bled him, and the blood was much inflamed and sizzly ; he was bled twice more in the course of three days ; the hardness and size of the belly, especially just above the pubis, increasing daily, but not painful, and he made no water, but a very considerable quantity kept constantly dribbling from him upon cloths, so that I thought little or none was retained in the bladder, and his physician

was of the same opinion. In this way he continued, without making water, till the 13th of February. It was now thought, from the *touch*, that there was either blood or urine contained in the bladder, and the catheter was introduced, and five or six pints of high coloured, but not bloody urine, were brought away. It is to be remarked, that he had no pain before this operation ; that he did not seem to suffer for want of making water ; and that after the evacuation of the urine through the catheter, the bottom of the belly seemed as full and as hard as before. Ever since that day, (Feb. 13th) to this present time, the catheter has been used night and morning, and sometimes three times in the twenty-four hours, except in the latter end of May, when it was discontinued totally for a week, by the advice of an eminent country surgeon, who said we should never get rid of the bloody urine till the catheter was

left off. For some weeks previous to this advice, he had regained the power of making water occasionally, but not sufficiently, and the catheter's use was thought necessary only occasionally; but when the instrument had not been made use of for a whole week, after a gentle walk of a quarter of a mile, the bloody urine returned in an increased quantity, and the ability to make water became less, and the assistance of the catheter was forced to be resumed, and is now introduced night and morning, though he makes a little water several times in the intervals. It is necessary in this place for me to observe, that large quantities of mucus have always, since the beginning almost of the complaint, been discharged through the catheter, at the latter end of the operation, just before it has been withdrawn, and for these last three months, it has frequently had a purulent appearance, and a very fetid offensive

smell, and has been mixed with more or less blood.

“ The patient is 75 years old: I have known him almost 50 years. He has been a fox-hunter all his life, and could have used as much exercise on horseback, and did, with as little fatigue, as any man of any age, even to the commencement of his disorder. From his long illness and confinement, he is now rendered feeble and emaciated, but his vitals are good, his pulse not quick, and no absorption of matter has taken place. The disease has been denominated by the physicians, a *palsy of the bladder*; for my own part, I have been of opinion, that the want of action of the bladder has been owing to an induration and thickening of its coats, and which had been coming on though he himself might be unconscious of it, some time before the hæmorrhage began. Mercurial frictions, tepid bath, electricity, and blisters, have been tried, and

the bark and other tonics. There is even, at this moment, a considerable degree of hardness above the pubis, but whether it be the bladder itself, or the cellular substance about it, I do not decide ; but if any means of relief in this long and difficult case can be suggested, it would afford sincere pleasure to his very numerous and respectable friends."

This gentleman died about seven or eight months after the period at which the present statement was made out.

SECTION II.

*Case of Hæmorrhage from the side of the
Bladder, contrasted with the preceding
Cases.*

CASE IV.

JOHN BURTON, 65 years of age, a painter and glazier, who had, for upwards of sixteen years, been disabled from work, by tremors in his extremities : at this time he was just able to totter about, bent half double. In this way, however, he took moderate exercise. He had a constant desire to make water, voiding it every half hour : in coming away, it had the appearance of fluid blood, and when allowed to stand, the whole mass formed one uniform coagulum. This attack of bloody urine lasted a month, and then went off. It was

unattended by any other symptoms, so that it was difficult to guess at the cause. After it went off, he made water only at the intervals of six hours. He said that he had previously had several such attacks, but none equally severe, nor of the same continuance. In about three months, he had a return of the same symptoms : the bloody urine was constantly dribbling from him, occasioning great uneasiness. He was very feeble ; his nervous tremors were more violent, and he gradually sunk under symptoms of low fever, and in about a fortnight from the beginning of this attack he died.

On inspecting the body after death, the right kidney was larger than usual, and had two small cysts, the size of walnuts, in its substance ; they contained a dark coloured gelatinous substance : the pelvis and ureter were in a natural state. The left kidney was free from disease.

The urinary bladder contained two

ounces of coagulum : its internal membrane was unusually vascular, and near the entrance of the right ureter, there was a fungous, fibrous excrescence ; the fibres of a bright red colour. Vide Plate X.

The symptoms were evidently produced by occasional attacks of inflammation of the bladder, which this fungous excrescence made him more liable to, and whenever they came on, an hæmorrhage was produced, readily distinguished from that which takes place in the prostate gland, or from its surface. The patient was attended by Mr. Rose.

SECTION III.

Case of Ulceration of the Middle Lobe

CASE V.

A. B., aged 73, about four years ago, experienced a sensation of tightness on the lower part of the abdomen, and frequently an inability to make water, but no increased frequency in the calls to do it, although he was only able to part with a small quantity at a time: this continued for two or three months, and then gradually went off. In a few months, he had a recurrence of this complaint, which likewise subsided in the same way. He had several other attacks of the same kind; but within these five weeks, an attack has come on, so violent as to prevent him from following his usual occupations. It began in the evening,

with violent pain in his loins; great difficulty in passing water, and pain in doing it; also a considerable degree of pain at the extremity of the penis, when the desire to make water came on, which lasted for some time after the water had ceased to flow: the desire returned eight or ten times in an hour, and only a few drops passed at once.

On the 29th of July, 1813, a gum catheter, without the stilet, was introduced into the bladder, and 32 ounces of urine were drawn off: in 8 hours the catheter was passed again, and 12 ounces were drawn off; the instrument was allowed to remain in the bladder. On the 30th he had a tolerable night, but the instrument caused considerable uneasiness at the neck of the bladder.

31st. The water is drawn off twice a day; very great pain is caused by the contraction of the coats of the bladder

upon the catheter, in expelling the urine, which lasts an hour or two afterwards. His bowels, which had been usually open, are now become confined, requiring the use of castor oil for their relief.

Aug. 1st. The catheter was withdrawn in the morning, on account of its giving so much uneasiness, but, upon the whole, the patient is better: his urine was drawn off morning and evening, and at night he had a starch glyster, with 30 drops of laudanum administered.

2d. The urine was drawn off twice a day; the quantity 12 ounces each time: so small a quantity shows, that the secretion is diminished below the natural quantity.

Aug. 3d. In the morning, 16 ounces were drawn off; in the evening, 12. The pain occasioned by the contraction of the bladder, is diminished; but there are great pains in the loins, for which the parts are rubbed with the flesh brush.

4th. 16 ounces were drawn off in the morning ; 12 in the evening. He complains of great prostration of strength : the pulse is quick ; the skin hot and dry.

5th. 18 ounces were drawn off in the morning ; but the difficulty in passing the instrument was so great, that it was not passed. In the evening he took saline draughts and antimonial wine.

6th. In the afternoon, at 1 o'clock, the catheter was passed, and 28 ounces drawn off: before the operation, 7 ounces had passed naturally.

7th. He passed 6 ounces naturally, 28 were drawn off.

8th. The instrument now passing easily, and that of a full size, 22 ounces were drawn off.

9th. 22 ounces were drawn off in the morning, 20 in the evening,

10th. 24 in the morning ; 16 in the evening.

11th. 12 ounces in the morning, 20 in the evening; but passing the instrument now, causes more pain.

12. The catheter could not be passed without the use of the stilet: 18 ounces drawn off, and the catheter allowed to remain in the bladder.

13. The catheter now does not cause much pain: it is allowed to remain in the bladder.

14th. There is so much uneasiness, that it was thought right, that the catheter should be withdrawn.

15th. The stilet is necessary to get the instrument to pass: 40 ounces drawn off; 24 in the morning, 16 in the evening.

16th. The same quantity drawn off. From this time he began to sink, and although the urine was drawn off twice a day, and the quantity about 30 ounces a day, he died on the 20th.

On inspecting the body, the kidneys

were in some degree wasted. In both pelvises there was a purulent fluid ; the ureters were dilated to four times their natural dimensions ; their internal membrane much inflamed. The muscular coats of the bladder much thickened. Vide Plate VII.

The lateral lobes of the prostate gland were enlarged, and hard in their texture ; the middle lobe very little prominent, but the membrane covering it, was much torn and abraded by the point of the catheter, and the surface of the passage, along which the instrument had gone (which was readily observed) through its whole course was in a state of abrasion. The same appearance extended into the cavity of the bladder, and from the surface there were projecting membranous films of coagulable lymph, which, in a short time, would have become encrusted with calculous matter, had there been, in the urine, the proper materials to make that deposit.

SECTION IV.

Case which must have been mistaken for Enlargement of the Middle Lobe, had there been occasion for the use of the Catheter.

CASE VI.

THIS is a Case which, as the body was examined, on account of complaints unconnected with those of the bladder, and no opportunity occurred of enquiring whether, during life, any symptoms had been met with, that were brought on by the peculiarity of structure which it illustrates, can only be set down as an unnatural state of the neck of the bladder, and that of very rare occurrence. Were it only to be considered in that view, it would not have had a place in the present work; but as it is a preternatural formation of that kind which would have misled the surgeon, had there been

any occasion to pass an instrument into the bladder, and prevented him from succeeding in the operation, it is right to put it upon record, as a landmark to other surgeons, for although it has happened only to have been seen by me once in 42 years, it may again occur in greater frequency to others, and whenever connected with disease in those parts, lead him to an erroneous conclusion, if not forewarned, that such a peculiarity may possibly occur. Vide Plate VIII.

The appearance is that of a regularly formed pouch, just under and before the middle lobe of the prostate gland, of considerable depth.

SECTION V.

*Cases of Enlargement of the Middle Lobe,
with Stricture in the Urethra.*

CASE VII.

A. B. aged 76, had laboured under strictures in the urethra, from his youth upwards. At 65 years of age, he put himself under the care of a surgeon, who tried, without success, to get into the bladder, by means of the common bougie, for three years ; at the end of that time, the patient came under my care. After persevering for some months, with the armed bougie, I succeeded in getting through two strictures, but was unable to pass a bougie into the bladder, the point of it always hitching at the prostate gland. This circumstance, and the symptoms remaining the same, led

me to pass a flexible gum catheter, without the stilet, which had acquired a curve, and I succeeded in getting it into the bladder. I drew off his water once every 24 hours, and the quantity was usually about a pint. Sometimes the bladder would become irritable, in consequence of the state of the bowels, and at these times a spasm came upon the urethra, in the part where the stricture had been, so as to make it difficult to pass the instrument. I never could induce him to let the instrument remain in the bladder, nor could I persuade him, that gradually increasing the size of the instrument, would be attended with great advantage in promoting his cure. Whenever he had a little ease, he was satisfied, and would have nothing more done, till an attack upon his bowels, disturbing these parts, and making him suffer very severely, he then occasionally permitted the instrument to remain 24 hours, rarely, however,

so long. In this manner we went on for several years, never able to do altogether without the catheter, nor having it passed often enough to restore the bladder to its natural state. His complaints, and the frowardness of his temper, increased with his years, but the catheter being passed always gave relief. At the end of four years, I taught his servant how to pass the instrument, which he continued to do till the patient's death, a period of four years longer; he often failed, and was then obliged to send for assistance. His bladder becoming more irritable, he became impatient of pain, and had now recourse to the catheter as much too often, as before too seldom. In the last two years of his life it was evident, that the servant had made use of too much violence upon some occasions, when the spasm in the urethra was violent; for the passing the instrument after that period, required a degree of management it had not done

before, and the servant could often pass it, from daily practice, when I could not, and at times, this difficulty was so much increased, that it became necessary to leave the catheter in the bladder.

His death did not appear to be the direct consequence of the state of the urethra and bladder, but from fever, occasioned by the state of his bowels, although there is no doubt, that from the long continuance of the complaint, an abscess at the neck of the bladder, was the real cause.

On inspecting the parts after death, the coats of the bladder were not found to be much thickened; the lateral lobes of the prostate gland were so much enlarged, as considerably to increase their thickness, and form a deep sulcus at the verumontanum, which formed the obstruction to the bougie, and made it necessary to have the catheter curved to a considerable degree, before it could be made to enter the

bladder. The middle lobe was just sufficiently prominent to act as a valve. On laying open the urethra, it was found to have been ruptured close to the part where the stricture had been, and a false passage made by the catheter, behind the inner membrane, for nearly an inch in extent; but the point of the instrument, from its being considerably curved, and used with a stilet, had forced its way out of the false passage back again into the urethra a little further on; and there is no doubt, that for the last year, at least, of the patient's life, this was the course the catheter had always taken, with very little, if any, disturbance, to the parts immediately surrounding that canal.

The urethra, near the verumontanum, had suffered materially from the injudicious violence used in passing the instrument, and the inflammation had extended to the fat and cellular membrane, between the

urinary bladder and rectum, where two small abscesses had formed ; and to the fever and other symptoms attendant upon their formation, may be traced the cause of death.

It is remarkable, that in a case in which the lateral and middle lobes had been so much diseased, as to require the urine to be drawn off for eight years, the enlargement during that period should not have increased to a greater degree. This may probably be accounted for by the stricture in the urethra, and the spasmodic contraction to which it was so liable, preventing so violent a pressure upon the projecting parts of the gland, as would otherwise have taken place. Vide Plate VI.

SECTION VI.

*Case of Enlargement of the Middle Lobe,
connected with Stone in the Bladder.*

CASE VIII.

A. B., aged 76, in the year 1812, began to experience difficulty in making water. In the summer of 1813, while upon a long journey, he had a retention of urine, which was relieved by the introduction of the catheter. Upon his return to London, he continued to pass his water with difficulty, and with considerable pain. In 1815, these symptoms were all very much increased, and in addition to them, there was a burning pain upon the surface of the glans penis. He had become much emaciated, and was almost deprived of sleep. At this time, I passed a full sized elastic gum ca-

theter into the bladder, with great facility, and drew off a pint and half of urine. The pain the operation occasioned was very severe, and lasted for three or four hours, during which time he was walking about in great anguish, but had no desire to void any urine. He afterwards passed it frequently in small quantities as before. The catheter was passed about once every second day, and the pain, which was very severe, was moderated by the use of opiate enemias. At the end of a fortnight, he made water with more facility, and the quantity which was retained in the bladder, and drawn off by the catheter, was diminished, but the pain he suffered at the neck of the bladder had become more constant. At the end of three weeks, the urine left in the bladder, to be drawn off by the catheter, did not exceed eight ounces: the pain in the glans penis was now constant and intense, so that he had neither ease day or

night. One evening he was seized with a retention of urine ; the bladder was emptied by means of a flexible gum catheter, and for the first time a calculus was discovered, and considered to be the cause of all his sufferings. In the course of two or three days, he submitted to be cut for the stone, as the only means by which his sufferings could be relieved. In the operation it was observed, that the pain occasioned by the introduction of the forceps was unusually severe. Twenty calculi, of nearly a spherical form, were extracted, each about the size of a small marble, or a large pea. It was a remarkable circumstance, that in the act of opening the forceps, a number, and indeed the greatest quantity of the small calculi came away. This circumstance was so extraordinary, that when I felt them falling upon my feet, I thought some of the assistants had thrown something down.

After the operation, he experienced con-

siderable pain, fell into a state of stupor, from which he did not recover, and in eleven hours died.

Upon examining the body after death, seven calculi were found in the right kidney, but none had been left in the bladder.

The middle lobe of the prostate gland was considerably enlarged ; the membranous covering in a state of ulceration, which extended over the whole surface, and the internal membrane of the bladder throughout, was in a highly inflamed state. The lateral lobes also projected into the bladder, and united to the middle lobe, so that the whole of these projections formed a semi-circular wall between the bladder and the urethra. In the side of the right lobe, next to the urethra, there was a small projecting portion like an excrescence from it. The urethra, at its commencement, was enlarged beyond any thing that I have ever before met with. Vide Plate II.

From these appearances, and the violence of the symptoms, which could not have been produced by stones, whose surface was so smooth, and their individual weight so small, there is reason to believe, that the stones, before the journey, were in the bladder, but had, by the motion in travelling, been shook out into the prostate portion of the urethra, and by their motion on one another, when there, the urethra had been enlarged to its present capacity.

CHAPTER V.

ON THE FORM OF THE FLEXIBLE GUM CATHETER, AND THE MODE OF RETAINING IT IN THE BLADDER.

BEFORE I make any further observations on the treatment of the disease of the middle lobe of the prostate gland, in addition to those contained in the first volume, I must state the improvements that have since occurred to me, respecting the catheter; and as the mode of practice I have lately been led to adopt, depends more upon the structure of this instrument than it did formerly, it is of the more importance, that the catheter should be so constructed as to give us all the advantages such an instrument is capable of affording. In the first

volume I complained, that both in England and France, all the flexible gum catheters are made straight, and that it requires a long time before they gain a set in a curved form, by being kept upon a curved iron stilet ; that even after a period of ten years, they shall acquire it so imperfectly, that when the stilet is removed, before they can be passed into the bladder, they have become nearly straight, and that the part next the point, is that which most reluctantly retains the curve ; added to this, in giving these catheters the curve, almost all those that have two openings near the point, have one of them spoiled in the attempt, if not both ; and when there is only one, to prevent this accident, it is necessary to keep the aperture upon the curved part of the instrument, the part, of all others, on which it should not be, as it must come in contact with the lower surface of the urethra, and by its edges, be grasped at the

neck of the bladder, or lacerate the middle lobe of the prostate gland, even when it does not project beyond the surface, and in a still greater degree in proportion as it rises above it.

These defects in the flexible gum catheters are great, when the instrument is of a small size ; but when the catheter is made large, which it ought always to be when used in this disease, they become so much greater, that it is hardly ever possible to use one without the stilet, the inconvenience and disadvantages of which have been fully illustrated in the former volume.

It is now near twenty years since I applied my mind to the improvement of the form of this instrument, but met with so many difficulties, that I was almost induced to give it up. If the web upon which the varnish is applied, were woven upon a curved stilet, it would ever after retain this shape, but unfortunately, it adhered so

closely to the stilet, that it could not be got off; if wove more loosely, the web was not smooth; and I was told, that the eye could not be well made, unless the catheter was originally straight. These were difficulties, but as it was of very great importance that the instrument should be curved, I thought they might be got the better of; but all the makers that I met with, were irregular workmen, whose ingenuity led them to take up this trade as a very lucrative one, but they had not steadiness to go on uniformly with any one pursuit, and were led away by some other delusive speculation, before they succeeded in making straight catheters so perfect as they might have done. I at last, however, found a more steady, and at the same time, a more ingenious artisan. Mr. Wiese* has, after the labour of five or six years,

* Mr. Wiese lives at No. 33, in the Strand.

succeeded in making flexible gum catheters, curved in their original formation, so that they consequently retain that form : their polish is so great as to make them, in that respect, have every advantage of surface, and their size may be made as large as the surgeon shall choose to direct. In his first attempts in making large ones, they were, from the increase of their diameter, so weak in their sides, as to be unable to resist the spasm which occasionally comes upon the urethra, near its middle, and often when an instrument was retained in the bladder, its sides were actually brought together, and the tube closed up, till the spasm subsided ; and afterwards, this part of the instrument had suffered so much, that it became necessary to withdraw it ; when taken out, it had the appearance of having been broken by some mismanagement of the patient, but upon slitting open the tube, the passage at this part was

nearly closed, from having been grasped with more violence than the coats were able to resist. He now, therefore, gives them strength in proportion to their size, and I have thought it necessary to explain the reason of their being made so strong, as it might appear, both to surgeons and patients, unnecessary, unless they were made acquainted with the circumstances above mentioned. When the curvature of the catheter is no part of its original formation, although it may have been produced by being long kept in a curved state, yet when allowed to remain in the bladder, it gradually returns to its straight form, by being moistened, and when it has acquired it, the point is no longer kept directed upwards in the cavity of the bladder, but is constantly pressing against the posterior coats, pushing itself out of the urethra, and the irritation it gives the muscular coat of the bladder will often be the means of its being

expelled by a spasm with considerable violence : this explains what happens when the patient, in consequence of finding, after he has drawn off his water, that the instrument has been pushed out further than it ought to be, pushes it back again, so as to replace it, he hears a clap or noise, which at first, will alarm him with the notion, that it came against a solid substance, and therefore, that there is a stone in the bladder, while it is nothing more than a spasmodic action of the coats of the bladder upon the instrument.

When a flexible gum catheter is to remain in the bladder, it is very desirable that it should be as little disturbed as possible, since every time it is moved backwards or forwards, it is rubbing upon an inflamed swollen prominent part, and therefore interferes with the subsiding of all these symptoms. I have known a patient suffer considerably from this kind of friction, with-

out being conscious that he was producing it, nor was it readily detected in what manner he did it, as he was constantly in bed, and every time I saw him, was lying perfectly quiet ; but one day, my visit being longer than usual, and his getting into an animated conversation, led me to discover it. I found, that the change from the recumbent posture to that of sitting, while talking, was incessant, and upon enquiry, I was told, that this was his usual habit the greater part of the day. Upon explaining to him the disadvantages arising from this kind of exertion, and confining him to a recumbent posture, the symptoms of irritation subsided.

To keep the catheter in the bladder, with as little motion as possible, various contrivances have been had recourse to : it becomes unnecessary to enter into detail upon those that answer this purpose very imperfectly ; but I shall particularly mention

that which appears to me to have succeeded better than any other. It is an elastic collar for the body of the penis, about an inch and half broad, lined with velvet, the grain of which is placed so as to prevent the collar moving forwards, and this collar, instead of being fastened like that of a squirrel, or any other small animal, is only to have one end lapped over the other, so that it may be adjusted accurately to the size of the penis, and then it is to be fixed exactly in that position, by a stud received into small holes in a leather strap. If on each side of such collar, there is a ring, and just below the orifice of the catheter, there is a small silver nozzle, in which the catheter is fixed, and from it, on each side, an arm, half an inch long, is extended, at the end of which there is an horizontal ring, similar in size to that on each side of the collar, applied round the body of the penis. With such an apparatus, all that is necessary to

keep the catheter in the bladder, and always in the same state of protrusion from the urethra, and consequently having the same length retained in the cavity of the bladder, is, to have narrow bands of kid leather passed through the holes in the nozzle of the catheter, and in the collar on the penis, and then to have them fastened together with the necessary degree of tightness.

Thus secured, the penis and the catheter become, as it were, parts of the same instrument. When the penis becomes extended, the catheter is carried along with it; when it subsides, the instrument is carried back; but that which is a great advantage is, the compression over so large a portion of the penis, which prevents it from varying its dimensions so much as it would otherwise do, and thereby prevents a great deal of inconvenience, whenever a disposition for erection is produced, which not unfrequently takes place.

Besides the advantages which I have mentioned to belong to Mr. Wieses's flexible gum catheter, I have now an opportunity of stating, that I have kept them fifteen days in the bladder, and when taken out, they have not, in the smallest degree, suffered from the urine in the bladder, or the mucus in the urethra. The colour of the surface has been rendered dull, but the smoothness remained the same, and the curvature had been little, if at all, changed. This has never been the case with any of the other catheters I have employed, either English or French; all of them, in a shorter period, have become so rough, as to be unfit for further use.

CHAPTER VI.

ON THE TREATMENT OF CASES OF ENLARGEMENT OF THE MIDDLE LOBE.

IN the first volume I did not absolutely forbid the use of the tepid salt hip bath, although I declared, that it should only be used in the incipient stages of the disease. I am now perfectly satisfied, that it should never be resorted to, being a practice as little applicable to this disease, as putting the head in warm water would be to remove the symptoms of apoplexy, produced by bursting a blood vessel in the brain. If any applications are to be made to the parts, they should be such as produce cold, but none of the ingredients should be vinegar, nor any other acid, since I have shewn, in my work upon Strictures, that the vapour

of vinegar passing down from the mouth to the stomach, is capable of immediately acting upon the neck of the bladder.

I know of no advantage to be derived from internal medicines, although I have attended, with great solicitude, to this part of the subject, since the first volume was published. Great care should be taken that the bowels are kept open, and it will be found, from the histories of the cases, that in some instances, this is attended with great difficulty. I still continue to consider the infusion of senna with the tincture and soluble tartar, varying the proportions according to the circumstances of the case, the best preparation for this purpose. This medicine, while it agrees with the stomach, seems to increase the peristaltic motion of the bowels, so that their contents shall be completely evacuated, and I should rather be induced, when the first dose of this mixture fails, to repeat it as often as may be

necessary to produce the effect, in preference to applying to any other internal medicine. Calomel, which is now so very fashionable a medicine, I venture to decide, as not being fitted for the present complaints, being of too violent a nature, and often bringing on straining, which, whenever it is produced, aggravates all the symptoms of the disease, by bringing on a pressure on the neck of the bladder.

When the constipation is only in the lower bowels, in consequence of the pressure of the prostate gland upon the rectum, it is more likely to be removed by glyster, than by any medicine given by the mouth;* and it will be found in the Cases, that the fæces from this kind of retention, have become as hard as hazle nuts, and have made a passage, by means of ulceration, into the

* Two drams of powdered aloes, dissolved in a pint of milk, forms an enema well fitted for this purpose.

bladder. I am induced to consider the disease of which I am treating, as one that is entirely local, produced by local violence, kept up by local circumstances, and having all its symptoms aggravated by a succession of causes of irritation belonging to the natural actions of the organs to which the prostate gland is attached ; and I am sorry to say, that the disease, too frequently, has not only its progress increased, but unnecessarily produced, by the unskillful use of the instruments employed for its relief.

This view of the complaint, is the result of an extensive experience in the treatment of it, confirmed, and almost demonstrated, by the plates annexed to this and the former volume. What is here illustrated, is now more comprehensively understood than it was six years ago ; and the greater my experience, the more strongly am I induced to recommend the avoiding, as much as

possible, the repetition of the passing of instruments, and that they should only be employed by the most skilful hands ; that they should be made of the softest and least harsh materials ; and that metal catheters should never be used but in cases of necessity, where the patient cannot be relieved by milder means. When the engravings which illustrate this volume, are accurately examined, and thoroughly considered, they will prove almost to demonstration, that not only the ulceration of the middle lobe, the abrasion of its surface, and the wounds through its substance, are all to be attributed to the use of the catheter, and the inflammation consequent to these acts of violence, has extended over the whole of the internal membrane of the bladder, and been too often the means of putting an end to the patient's life, which, had the cases been differently treated, there is every reason to believe, from a reference

to other cases, might have been preserved for many years. With such a view of the subject before me, it is not to be wondered at, that I should deprecate the practice too commonly adopted, of passing, in the earliest stages of the disease, metal catheters, because they are more readily managed, and because there are fewer chances of the surgeon being foiled in introducing them, than those that are softer in their texture, milder in their application, but requiring greater skill for their guidance. By such a mode of practice, the surgeon appears to be preferring his own convenience to the chances of aggravating the distresses of his patient, and hurrying on the disease. While I had only seen the ulceration on the projecting enlargement of the lateral lobe, and on the point of the middle lobe, when that part had been greatly extended in its dimensions, I was willing to believe, that such ulceration was a natural consequence of the

progress of the complaint, and when the disease had arisen to that height was inevitable ; but now that I have witnessed so many instances in which the middle lobe, little indeed, enlarged, when compared with other cases of this complaint, has shown no disposition to further increase, after having been so ill treated, and in many parts lacerated, so as to produce ulceration ; I must naturally conclude, that if no violence had been committed upon it by the surgeon, and the suppression of urine had been removed, by once introducing the catheter, and a prevention established against recurrence, by leaving it in the bladder, the degree of swelling that produced the suppression, might have subsided, and the patient been restored to health. When I see such things, and am fully convinced, that the slightest abrasion of the membrane that covers the middle lobe, is capable of producing the most violent degree of irritation,

and that the very circumstance of the urine passing over the abraded part, joined to the pressure that is made upon it at the end of making water, by the spasmodic action of the sphincter vesicæ, increase and aggravate that irritation, and prevent the excoriated surface from healing, and therefore forming a complaint, in itself sufficient to render life miserable, even if the suppression of urine, and its cause, no longer existed, and the use of instruments was no longer required. Can I, when possessed of this information, too strongly inculcate the mildest possible means to be adopted, not only in the beginning, but through all the different stages of the treatment of this disease, since more is to be dreaded from mismanagement, than from the disease itself?

It is within my own remembrance, but I am proud to say, for the credit of surgery, which has so much improved since that time,

now more than forty years ago, that a gentleman objected to have an instrument passed into his friend's bladder, to ascertain the nature of the disease under which he laboured, and upon my asking what was the nature of his objection, he said that he had lived many years in the Temple ; had known many of his friends attacked with complaints in the bladder, but from the time an instrument had been introduced into it, he had never known one of them afterwards capable of making water ; they all required its being drawn off as long as they lived. His remark made a great impression upon me ; and the mode in which instruments were too commonly passed at that time of day, was such as to make the conclusion this gentleman had drawn, one, founded upon some observation.

Having said so much upon the mischief that may be done, and which unquestion-

ably is done by the use of instruments in this disease, and more especially by the repetition of their use, I shall now lay down the plan I would recommend to be adopted. Bleeding from the loins or the arm, I have already stated to have, in some instances, carried off the attack, and when bleeding can be employed, it should always precede any other mode of treatment; acting briskly on the bowels, is the next thing to be resorted to. If, in defiance of these means, the patient is unable to make any water, or although able to pass a few ounces, is every hour obliged to make the attempt, and with much straining, does no more than void the same quantity, such symptoms are most undoubtedly not to be allowed to go on, since by their continuance, they are establishing a complaint, which I may say with confidence, if the symptoms are arrested in their progress, will get well. A flexible gum catheter, such as I have

described, should be passed without a stilet, in the most skilful manner, into the bladder, using the smallest degree of violence that is consistent with the nature of the operation, and when the bladder is emptied, the instrument should be retained in the bladder, by the means pointed out in the last Chapter ; it should be kept there, the water being drawn off at regular intervals, not only till the first symptoms go off, but till the bladder can retain the water for the usual length of time, and the water, when voided, has the appearance of healthy urine. The means to be employed in preventing and assuaging pain, are Dover's powders in different quantities, according to the urgency of the symptoms, and opiate glysters. As soon as the parts have recovered themselves, the catheter is to be withdrawn, and there is every reason to believe, that it will not be necessary to introduce it again upon the present occasion. It may be said, that

if the introduction of the catheter is attended by no difficulty in the first instance, surely it cannot be necessary to put the patient to so much inconvenience and discomfort, not forgetting the alarm of having an instrument in his bladder, without being sure it is necessary, and therefore the catheter may be taken out to ascertain whether it really will become necessary to adopt such harsh measures. The practical answer to this is, that it is by no means uncommon for the instrument to pass with facility for the first time, but when an attempt is made to reintroduce it, the difficulty is great, and too often it cannot be effected, and when it can, much violence is necessarily used to effect it, and that violence with a stilet in the catheter, so that the parts, in a moment of all others when tranquillity was necessary for their recovery, are disturbed to the greatest degree, which, if the instrument had been left in the bladder, would have been alto-

gether avoided. It may, however, be urged, that the patient would not submit to the instrument being kept in. I would say, in answer, I dare say not, if it is not clearly and distinctly explained to him, the necessity there is for its being so. I never met with a patient so unreasonable as not to prefer the mode of treatment which upon the whole was to give him least pain, and the most conducive to a speedy recovery, when I was myself able confidently to point out what that was. But the ready submission to the alarms and notions of a patient is, in my opinion, a misapplied good nature, letting him become the dupe, and often fall a sacrifice to his own ignorance, rather than take the trouble of setting him right.

When the catheter is withdrawn ; should the patient not empty his bladder, it must be re-introduced, and after six or seven days taken out again.

There are many cases in which the

disease has been of long continuance before this plan has been proposed, and the patients so circumstanced as to be unable altogether to lay by, and therefore must have the catheter passed occasionally upon a general average three or four times in the 24 hours; but even in these cases, when an attack of irritation is brought on by accidental circumstances, the instrument must be retained in the bladder till that attack goes off, and if the instrument is passed by the patient with unusual difficulty, he should not persevere in introducing it himself, but let it be done by his surgeon, and kept in the bladder.

It is hardly necessary to add any thing more upon this subject to what has been stated in the former volume, and the practice detailed in the histories of the following Cases. One remark it may be proper to make, although probably a repetition of what has been already more than once

stated, but not in the same direct manner, respecting the treatment. The remark is this, that whenever, in the course of the management of these cases, symptoms exactly like those of typhus fever come on, they are not to be considered as belonging to a new disease that has supervened, but are to be recognised as belonging to the affection of the bladder, or abscess produced in the substance of the prostate gland or its neighbourhood, and treated as such, by doing every thing that can relieve these parts, or admit of matter being discharged the moment it is formed, since the smallest quantity, when confined in this situation, is, from being mixed with urine, and rendered extremely acrid, found to produce symptoms of this kind, which in a very short time prove fatal.

CHAPTER VII.

CASES IN WHICH THE TREATMENT IS ILLUSTRATED.

As cases of this disease do not always come under our care in the earliest stage, it frequently happens that too much has been done, and the parts too much injured to admit of the recovery of the patient ; were it otherwise, I am very sanguine in my opinion, that most of them might get well.

In the following cases, all the varieties of the disease that I have met with, which are not stated in the former volume, are detailed.

SECTION I.

*Cases in which the Treatment was wholly, or
in part successful.*

CASE IX.

A GENTLEMAN, aged 72, consulted me on account of a frequency of making water, which was suspected to arise from stricture. I told him, that it was not produced by that cause, but that he had caught cold, and the effects of it had fallen upon the neck of the bladder: I advised an opening draught of senna and soluble tartar, and glysters of cold water. By these means he recovered from this attack, and continued tolerably well for two years. He then was seized in the country, fifty miles from London, with a suppression of urine, for which he could get no relief, the surgeons upon the

spot being unable to pass a catheter into the bladder, I was sent for, and being provided with large flexible gum catheters, I passed one of the largest size, and drew off one pint and half of water : I wished the catheter to remain in, but towards morning, by moving in his sleep, it by some accident came out. I endeavoured to re-introduce it, but without success, the parts being in a state of violent spasmodic contraction : a silver catheter, of a size still larger, was, however, got into the bladder ; after it remained there a few minutes, and the spasm had gone off, I withdrew it, and replaced the flexible gum catheter first introduced. With this remaining in the bladder, he was next day brought to London, which was November 21st. At this time the symptoms were, frequent calls to make water, requiring the bladder to be emptied every hour ; pain in the region of the bladder, and the urine loaded with

mucus. The instrument was not removed till some time after all these symptoms had subsided, which happened in a few days. On the 6th of December, it began to irritate the urethra, and was taken out, but as no urine passed when the inclination to make water became strong, another flexible gum catheter was passed, and kept in till the 20th of the same month, when it was again taken out, but after six hours, his being unable to make any water, was considered a sufficient reason for replacing it, and continuing it in the bladder till the 1st of January, 1813: it was then again removed. He had no inclination to make water after it was withdrawn, for eight hours, and then made about an ounce at three trials, but on passing the catheter, a pint remained in the bladder; the instrument was therefore kept in, and taken out on the 7th: while it was out, at three different efforts, he made 4 ounces of water,

only leaving 3 ounces in the bladder: the catheter was replaced, and kept in till the 10th, when it was found that he was capable of emptying his bladder, and therefore it was no longer necessary to make use of the catheter. This gentleman has had no return of the complaint, although five years have elapsed since a catheter was used. In the winter 1814, he had an attack of irritation in the bladder, attended with frequent calls to make water, in consequence of having exposed himself imprudently to the inclemency of the weather, and was alarmed, lest there should be a return of his complaint, but upon passing the catheter, I had the satisfaction to find that there was no water in the bladder. Since that time he has married, and even under these circumstances, which are not very favourable to those liable to this complaint, he has continued well.

CASE X.

A GENTLEMAN, 61 years of age, who, for many years, had frequency of making water, who had indulged in an immoderate degree in horse exercise, and was of an uncommonly anxious disposition, on the 11th of February, 1817, was attacked by a suppression of urine. He suffered most severely from the effects of retention, and a flexible gum catheter was with great difficulty passed into the bladder: the first attempts, which were unsuccessful, having been made with that instrument in a straight form, and when the parts were irritated, it was tried with a stilet, and in this way succeeded. When once passed, it was retained there. The patient complained much of the inconvenience, but upon being told, and having the matter fully explained to

him, that it was the only means by which he could get well, he submitted to its being kept in the bladder. On the 1st of March it was withdrawn, but the patient not being able to pass any water while it was out, and the distention of the bladder with urine, giving severe pain, at the end of six hours it was replaced. On the 26th of March it was again taken out, in the morning; in the course of the day he made water in small quantities, and towards evening, 4 or 5 ounces at a time: at 11 at night, the instrument was introduced, to ascertain the quantity which might still remain in the bladder, and it was found that there were only 7 ounces. Under these circumstances, the instrument was not left in the bladder, and an assistant remained all night in the house to replace it, if necessary. He was called upon to draw off the water twice in the course of a few hours, such was the quantity of urine secreted, and none passing

naturally. This occasioned so much distress, that the second time the catheter was passed, it was kept in: but such was the naturally anxious disposition of the patient, and so many symptoms of irritation were produced by his inquietude in bed, moving too frequently from the sitting to the lying posture, that this plan of keeping it in, could not be followed for any long continuance. These irregularities, all of which I was not acquainted with at the time, brought on spasms upon the bladder, forcing its coats with violence against the point of the instrument, which brought on frequency in making water;—but one day, visiting him at an earlier hour than usual, I met him walking from one room to another, by way of changing his bed, a liberty I never expected he would take. This gave me the opportunity of explaining more fully than I had done, what the effects of such exertions would be in retarding his

recovery. From this time he was more correct in following the rules that were laid down to him, and in about a month he was so much better, that the catheter was left out in the day, and only passed and kept in all night. It is to be remarked, that from the time he went to bed, the secretion of urine was increased to a very great degree, so that it was more than treble what it usually was in the day.

On the 1st of May, he was so much better in all these respects, that the instrument, instead of being passed immediately at bed time, was introduced two or three hours after he had been in bed, and in ten days he was able, in a natural way, completely to empty his bladder, nor has he had any relapse in six months, except one day that he attempted to ride on horseback, he had a slight suppression, which went off without any medical aid, and has not since returned.

CASE XI.

A GENTLEMAN, 50 years of age, extremely nervous, and of a pale complexion, remembers in his early youth, to have been troubled with a weakness in his bladder, or want of retention of his urine. For these last two years, he has seldom been able to retain his urine during the day, but the complaint is, in reality, to be traced to five years back, when his whole system became generally debilitated, and the bladder in a particular degree. He soon got better of the general attack, but never altogether recovered the tone of his bladder.

For the last two months, his urine had been drawn off once a day, by a flexible gum catheter : the only apparent advantage derived from this practice was, an improve-

ment in his general health; but as in the night his kidneys secreted a large quantity of urine, his symptoms, which were those of weight and oppression in the region of the bladder, and an involuntary passing of the water, were little relieved.

In this state of his complaint, he put himself under my care in the beginning of May, 1817. Upon passing a flexible gum catheter without the stilet, immediately after he had made water, a pint of urine was drawn off: the catheter was retained in the bladder, and the urine drawn off as often as the patient felt occasion for it.

On the 10th of June it was withdrawn about 10 o'clock in the forenoon, and not replaced till 10 at night. He made water to the amount of one or two ounces every hour and half during the day. When the catheter was returned, nine ounces were drawn off. It was again withdrawn on the 15th: 3 ounces of urine was the largest

quantity made at any one time during the day. When the instrument was returned at night, 12 ounces were drawn off. On the 22d, the catheter was again withdrawn. He made water in very different quantities through the day, and at nine in the evening he made 5 ounces. When the catheter was returned at 11, only $5\frac{1}{2}$ ounces were drawn off: more or less of smarting pain had been experienced every time he made water.

On the 29th the instrument was removed: the greatest quantity made in the course of the day, at any one time, was 7 ounces, and when the instrument was replaced, at the end of 12 hours, 8 ounces were drawn off.

July 6th. The instrument was taken out: the largest quantity made in the day $3\frac{1}{2}$ ounces. When it was replaced, at the end of 12 hours, 5 ounces were drawn off. His desire to pass his water has become

less frequent, and it is voided with more force.

13th. The instrument was removed, and the greatest quantity in 12 hours, at any one time, was $4\frac{1}{2}$ ounces ; at the end of that period, 9 were drawn off. He was very nervous all day, and the kidneys secreted an unusual quantity of urine.

26th. The catheter had been kept in 16 days, and had become incrustated with calculous matter. He was generally indisposed, and confined in his bowels : these symptoms were relieved by proper medicines. In the course of the day he made water very often, never more than 4 ounces at a time ; but as the quantities were largest towards night, the instrument was not passed in the evening. He had a good night, and on the morning of the 27th, made, at one time, 8 ounces, and continued through the day, making it in various quantities freely. On the 29th, the catheter was

passed, and as 11 ounces had been retained, it was kept in the bladder.

Aug. 3d. It was withdrawn, and an irritation came upon the bladder, attended with spasm, and a deposit of mucus, with a quantity of triple phosphates. Under these circumstances, the catheter was not passed again till the 14th, when the bladder was found to have recovered the power of completely emptying itself. On the 16th, the spasms had nearly gone off under the use of lemonade, given to correct the disposition to form triple phosphates: it is therefore probable, that the irritation was brought on by the pointed crystals acting upon the neck of the bladder.

In this state he went into the country, and has had no return of suppression, or want of power to empty the bladder, a period of five months. He is often attacked with nervous fits, and at these times, he makes water very irregularly, and in small

quantities, but when there is a copious evacuation from the bowels, he empties the bladder completely, and therefore, when the disposition to retain the water from want of action in the coats of the bladder, comes on, by throwing up a glyster of aloes and milk, he has always succeeded in removing it, and in emptying his bladder.

CASE XII.

A. B. 55 years of age, in the year 1811, was seized with an attack of irritation in the bladder. He had great frequency in making water, voiding it with great difficulty, straining, and pain, and in very small quantity at a time; there was always mucus in the urine; sometimes it was tinged with blood, and occasionally pure blood appeared to be discharged. For these symptoms he had been under the care of different surgeons, who made use of the common bougie, passing it occasionally, and at the time, it appeared to take off the irritation at the neck of the bladder; but the general symptoms were uniformly upon the increase. I had a written statement of the case sent to me, but I declined giving

an opinion upon it, as I understood the patient was in London, and if I saw him, the opportunity of examining into the cause of the symptoms, would prevent me from falling into error respecting the nature of the case, and the mode of treatment that should be adopted. Upon these grounds I was allowed to see the patient, and to examine the bladder by passing a flexible gum catheter into it. This was done immediately after his having made water, and I drew off above 4 ounces that he was unable to discharge. I explained to the patient, that it was this quantity of urine retained in the bladder, that kept up a pressure against the middle lobe of this prostate gland, and till that pressure was prevented from taking place, his symptoms would not abate. I drew off the water twice a day, but finding the instrument passed with increased difficulty, I succeeded, at the end of two days, with much intreaty, in per-

suading him to let the catheter be retained in the bladder. It was kept there for four weeks, drawing off the water, by taking out the peg, as often as the feelings of the patient required it. At the end of that period, the symptoms of irritation had entirely subsided; the bladder retained from 8 to 12 ounces of urine without inconvenience, but still no urine could be passed naturally, the use of the catheter being still required to draw it off. When a large quantity was collected in the bladder, some of it passed away involuntarily. Finding that he did not recover the power of making water, he was taught to pass the flexible gum catheter upon himself, without the stilet, and as no catheters were to be obtained with the requisite curve for that purpose, a number of new made, or newly purchased catheters, were put upon curved stilets, and allowed to remain in salt water, which, it was found, made them keep their

curve better than any other means that were devised. The catheter was taken off the stilet, passed, and as soon as the bladder was emptied, withdrawn, and put again upon the stilet. He found it necessary to pass the instrument four times in the 24 hours. In this way the middle process, or lobe of the prostate gland, appeared to remain stationary, but did not diminish in its size, so that no step had been gained towards making water without the use of the catheter. He went on passing the catheter four times in the 24 hours, without meeting with any aggravation of the symptoms, or obtaining any abatement of them, till the spring of the year 1816.

At this time it was observed, that the catheter passed with more difficulty than formerly, and it must be confessed, that he had taken liberties, both in exercise and the pleasures of the table, which were not warrantable under the circumstances of his

complaint. This difficulty increased so much, that he was obliged to have the catheter passed for him. In the introduction a tightness was met with at the membranous part of the urethra, and a difficulty in passing over the neck of the bladder, or in other words, over the lateral lobes of the prostate gland ; this might arise from those parts becoming more tumid ; but the difficulty at the prostate was necessarily very considerably increased by the instrument being grasped at the membranous part of the urethra, fixing it there, and not allowing the play that otherwise could be given to it in passing over the neck of the bladder.

In the November following, there was a falling off in his general health ; his sleep was disturbed ; his spirits depressed ; there was a sensation of weight and pain about the hips ; a degree of languor, and occasional chilliness.

These symptoms never went entirely off, and upon the whole, gradually increased, and about the end of January, one morning, upon introducing the catheter, as the point approached the membranous part of the urethra, he felt a sensation as if something had given way, and immediately a discharge of pus took place from the orifice of the urethra : the catheter was immediately withdrawn ; the pus continued to flow, not less in quantity upon the whole, than 4 ounces. Under these circumstances, the flexible gum catheter could not be passed without a stilet, and therefore it was necessary to make use of one ; but when the catheter had got into the bladder, it was retained there, and the patient was kept in a horizontal posture. Pus continued to pass by the side of the catheter, and the whole of the urine flowed through the catheter, so that there was reason to believe, that no portion of the urine ever

reached the seat of the abscess, and the constitution did not appear to suffer from what had taken place. At the end of four days, the catheter was withdrawn, and another introduced, and allowed to remain in the bladder. This system was persevered in, occasionally changing the catheter, for three weeks. The discharge of pus gradually diminished, and at the end of ten days, seemed entirely to have ceased, so as to give the idea of the abscess having entirely healed.

The instrument was now withdrawn, and as before, only passed four times in the 24 hours : the catheter now passed with its usual facility. All the tightness in the posterior part of the urethra, which was felt during the formation of the abscess, having gone entirely away, the uneasiness about the hips, and the loss of appetite he had experienced, were entirely removed, and his general health appeared to be completely

restored, so that he was equally well as before the formation of the abscess.

He continued without any aggravation of his complaints, till the 17th of March, 1817, when, in consequence of having been in the habit of living too full, and upon one occasion, not drawing off the urine when the inclination to make it took place; when he did so, running up stairs with some considerable quickness into a cold room for that purpose, he found, upon passing the catheter, that there were clots of blood in the urine, and that it was tinged of a deep red colour: this symptom created considerable alarm, and made him send for assistance. He was cupped upon the sacrum, and 12 ounces of blood taken away: he was confined to an horizontal posture, and kept upon a vegetable diet. The appearance of blood went off in about 14 days. From that time to the present, there has been no return of bleeding, or other symptoms of

the complaint, but it is still necessary, four times in the 24 hours, to draw off the urine.

This I must consider as one of the cases, as well as many related in the first volume of this work, which, if in the beginning of the attack, the catheter had been kept constantly in the bladder, so as to allow the original enlargement of the middle lobe of the prostate gland to subside, would, without the parts being pressed upon, have completely recovered.

SECTION II.

Cases in which the Failure of Success may be attributed to the Mode of Treatment.

CASE XIII.

A GENTLEMAN, 68 years of age, had a large rupture, which the truss that was employed to keep it up, gave so much pain, that he neglected its use, and as he lived 61 miles from town, all his complaints were communicated by letter, and were supposed to originate in this rupture, although that was by no means the case; but as he found, that an horizontal posture was the most easy, he lay much in bed, and abstained from all exercise. It was found he did not pass any water but involuntarily, and a surgeon came six miles, and drew off his water once a day, to the amount of a pint

and a half. While in this state, although he occasionally took opening medicines, the rectum was never emptied. He fell into a comatose state, with intervals of extreme agony, when raised up into a sitting posture, and also at the time the catheter was passed, which induced him to decline having the water drawn off, allowing it to pass involuntarily. Under these circumstances he gradually sunk and died.

On inspecting the parts after death, it was found, that not only the middle lobe of the prostate gland was enlarged, and had its surface inflamed by the frequent passing of the catheter, but some of the fæces in the rectum, had lain there long enough to be baked, and become almost as hard as hazle nuts, and these, by their pressure, had produced ulceration, and made a way into the cavity of the bladder, which allowed the urine to escape into the rectum. It was the urine passing over this

ulcer and excoriating the gut, that produced the distressing symptoms from which he suffered so much, and these were, in fact, the cause of his death.

CASE XIV.

THE following case bears a close resemblance to one in the former Section, and had the catheter been introduced at an early stage of the attack, and been retained in the bladder, the symptoms might have been stopped in their progress, but after the bladder had been kept beyond a certain time in a state of irritation, it was too late to make it retain the instrument, or at least it was thought so.

The surgeon who had the care of this patient in the country, sent me the following account of the case. He stated, that about a year before he had consulted me upon this patient's complaint, just at the time he was recovering from a suppression of urine, and had asked my advice

in case of a return of the attack, which I had at that time warned him was likely to happen; and that my advice, in case of such an occurrence, was to have him cupped upon the loins, give him, twice a week, a purgative draught, composed of senna and soluble tartar; to use the cold hip bath, and if the straining to make water was violent, to have recourse to the flexible gum catheter without the stilet, if it could be managed, and to leave it in the bladder. He now writes me word, “ I have followed, upon this attack, all the directions you gave me, except keeping the flexible gum catheter in the bladder, the introduction of which cannot be effected without the stilet, nor do I think the patient able to bear its continuance in the bladder. On one occasion, a few nights since, after having passed it, on withdrawing the stilet, such was the irritable state of the bladder, and the disposition to spasm,

that I was obliged to withdraw it. He at present labours under considerable uneasiness about the neck of the bladder, accompanied by a distressing sense of irritation in the rectum and anus. His difficulty in passing water always occurs when in an horizontal posture, so much as to require the catheter. At this time, the secretion of urine is very copious, of a pale coloured urine, and if the bladder is allowed to retain a pint and a half, spasm comes on, and sometimes to so violent a degree, that the instrument cannot be introduced till it goes off. He never makes water without considerable straining, and gets up five or six times in the night, but in the day time, when erect for a few hours, he is able to make water. He has received much comfort from the use of the opiate glysters, and in several instances, they have precluded the use of the catheter. The prostate gland is distinctly felt to be much

enlarged by passing the finger up the rectum. Just as the last drops are passing through the catheter, there is sometimes the sensation as if something, the hardness of cartilage, fell upon the point and embraced it." Here ends the history.

These symptoms gradually increased, and in a short time after my receiving this account, the patient died.

If the catheter had been passed in the first trials, with a leaden stilet, which admits of being withdrawn by means of its softness, without any strain upon the curvature of the instrument, the spasm brought on by the force necessary to withdraw a stilet formed of less yielding materials, would have been avoided, and the catheter might have remained quietly in the bladder till all the symptoms subsided.

CASE XV.

THE following Case, the history of which was communicated to me by letter, shows, in the most distinct manner, the gradual increase of the symptoms, when the proper treatment is not adopted, till they are too much increased to admit of the patient's recovery. It is so well drawn up, that I have not made the smallest alteration in the language of the letter by which it was communicated.

SIR,

A gentleman having for some weeks laboured under the symptoms I am just about to describe, and there being no immediate appearance of recovery, at the desire of his family, I submit the Case to you, with a

request, that I may be favoured with your opinion and directions concerning it.

He is 70 years of age, generally healthy, and of a very strong constitution, not given to any excess, an early riser, and of active habits ; but he has had occasion to observe, that the functions of the urinary organs were liable to disorder from causes apparently slight. About four years ago, he had an inflammation in the urethra, for which I recommended balsam of capivi, and some gentle laxatives ; but as it proved rather obstinate, he took advice here, and used astringent injections, and after a short time the discharge disappeared ; but one of the testicles underwent a slight degree of inflammation during the cure. Since that time he has observed the stream of urine rather diminished, and, at times, divided and twisted ; there has also been, for some time, rather intense pain in the emission of semen.

Three weeks ago he had some company in his house to dinner, and drank rather more freely of port wine than usual, but not a bottle. He also neglected voiding his urine for about twelve hours, and upon going to his closet, found it then impracticable. He had immediate recourse to fomentation, the warm bath, opiates, &c. and some urine came away in small quantities, but on the second morning he required the catheter, and since that time not even a drop has passed without its use.

At first stimulants were used, and tincture of cantharides was rubbed in, and *tinctura ferri muriati* exhibited in the usual doses; — laxatives, warm bath, &c. with opiates. There certainly was considerable spasm and irritation in the urethra, and towards the neck of the bladder, but no want of tone in the bladder itself, for he could modify the jet through the catheter at pleasure. I therefore advised the dis-

continuance of all stimulants—a low regimen—warm fomentations and opiates—the use of leaches, and to continue the laxatives he had been in the habit of using. The leaches did not fix so as to produce any effect; but the irritation and spasm is so far removed, that one of the largest sized catheters is introduced with much ease to the operator, a slight resistance being only felt about an inch from the prostate gland, when the patient complains of pain—and again on its passing immediately into the bladder. Nothing morbid is discovered by examination per anum, and he bears pressure along the whole course of the urethra, while the instrument remains in, without complaining of any extraordinary pain. With all this, however, the retention of urine remains, and for these eight days past, a gradually increasing discharge of a whitish fluid, which I suspect to be

real *pus*, has come on, a drop sometimes appearing at the extremity of the urethra, which sinks immediately in water, and a considerable quantity always coming away with the last of the urine, which is now upon all occasions turbid. Sometimes a little coagulated blood has come away, but for these two days that has not appeared. There has never been any considerable degree of fever, but towards night, an uneasy painful sensation is felt immediately above the pubis, and sometimes through the day. I should have mentioned, that he has had, at several times, sand coming away, but no stone is to be discovered in the bladder, the capacity of which does not seem at all lessened. The confinement, and perhaps the anxiety attending such a complaint, has, in some degree, impaired his appetite, and he is evidently somewhat emaciated ; but other-

wise, he feels very well, and has slept pretty soundly during the whole time he has been ill of the local complaint.

POSTSCRIPT.

This day the purulent discharge, on drawing off the urine, was greater in quantity than formerly ; but the patient has been out airing in a carriage, and upon the whole feels easy.

The result of this Case was, that the patient died before any new plan of treatment had been adopted.

CASE XVI.

*The Statement of a Case that was sent to me,
in which the proper Treatment was not
early enough adopted.*

ABOUT two years ago, a gentleman came gradually to be sensible of an inclination to make water frequently, and in small quantities, particularly in the morning, whether in bed, or sitting up, or walking before breakfast. It was not attended with pain, but only an urgency to comply with the desire. When sitting in his chair after breakfast, he was not much disturbed with this affection. He tried, at that time, the effect of nitre in small quantities, and oil of juniper, without any benefit, and paid little attention to the complaint, which gave him little annoyance, for he easily fell asleep

when awoke by it in bed, and even in travelling in a carriage it did not require his stopping more than once during a stage.

The last autumn he observed a certain hardness or swelling above the, *os pubis*, which he ascribed to flatulence (to which he is habitually subject, especially on the intermission of exercise in the open air) or perhaps to symptoms of gravel, and did not apply for medical advice.

But during the winter, when much occupied in public duty, he found his indigestion grow worse than on former occasions, and it was attended with thirst, a feeling he had scarce ever been subject to ; and he found sometimes in the morning, that some exudation of urine had passed during his sleep. At this time he passed usually from thirty to forty ounces of urine in the course of the night and morning ; latterly, during the severe weather in

January, he was subject to a sickishness in the evenings, which was very inconvenient to him.

He attributed his complaints, or rather the inconvenient augmentation of them, to the diminution of exercise abroad, occasioned by the weather and other accidents ; but having had recourse to advice, his person was examined, and the swelling in the region of the bladder appeared so considerable, that it was determined to try the effect of the catheter. Accordingly, on Sunday fortnight, the 30th of January, after having voided, in the course of the night and morning, about three pounds of urine in the usual way, and being able to pass no more, having neither any inclination for that purpose, nor any sensation that it was requisite, the catheter was introduced, and brought off fifty-four ounce measures of urine, and left the belly apparently in its natural state. The instrument was again

introduced in the evening, and also next morning, when about 33 ounce measures were drawn off, the surplus having been voided. Since that time, the catheter has been used morning and evening regularly, but no progress has been made in increasing the power to expel the urine, which operates habitually only on the surplus above, from 35 to 37, or even 40 ounce measures. And as he sleeps soundly, the power of expelling the urine seems in greatest energy in the morning.

The catheter was introduced without difficulty. The *urethra* was occasionally felt as if embracing it in different parts of its progress, and then it was felt by the patient as if passing through a place without skin. A few times a drop of blood followed the withdrawing it; but except the first time there was no sense, or almost none, of any inconvenience from its having been introduced, and the patient accord-

ingly has taken, in the course of the forenoon, some little exercise by trotting on horseback, and has also walked about four English miles, besides driving a little in a carriage; whereby his general health is improved, and the sickishness and thirst nearly altogether gone.

There seems to be considerable variety in the places in the *urethra* where a certain tightness is observed; once it was not observed at all, and nothing unpleasant felt, except just at entering into the bladder. The tightness seems to be somewhat connected with the state of flatulence in the stomach and bowels, which during the whole course of the patient's life has, at times, occasioned disagreeable sympathies when arising to a certain extent, and those sympathies affected always any part weakened by disease, fatigue, or external injury, and are conjectured by the patient to affect the *urethra* merely in this way, which had

never been exposed to the intrusion of instruments. The catheter is now withdrawn without pain, but in general, it occasions a momentary sting about its entering the bladder, or approaching to it.

The instrument employed is of the size of a small goose quill. It was perforated at the extremity, to try whether, on its approach to the *sphincter*, the urine could not be made to enter it; for it was observed, that during the evacuation by the instrument, a considerable power was exerted in propelling the urine, and latterly, this, towards the end of the operation, has been attended with an inclination urging the expulsion. The patient feels as if the approach of the instrument to the *sphincter*, enabled him to commence the expulsion of the urine, but it is not clear that it does so, as the skinless feelings at the instant, often prevent his distinct exertions.

The operator thinks, on the whole, that

notwithstanding the facility with which the instrument enters the bladder, the disease arises from some small enlargement of the prostate gland, which he thinks, by introducing his finger into the *rectum*, he perceived to be somewhat thickened on the right side.

Electric sparks have been taken twice before using the catheter, from above the *os pubis*, without any sensible benefit.

The patient is exactly 66 years of age, of a spare habit, temperate in eating and drinking, disposed to activity both of body and mind. He is somewhat reduced in flesh by his recent complaints, but he does not feel his strength or powers of exertion in walking without inconvenient fatigue impaired.

He has no uneasy sensation about the neighbourhood of the prostate gland, from riding or walking, nor any sensation indicating unsoundness there, from any thing

he has recently suffered. The stream in evacuating urine exceeding the quantity over which he has no power, is considerably narrower than natural. The electric sparks were discontinued, lest they should tend to stimulate or irritate the prostate gland, and the patient, from his sense of activity, and his power over the bladder after the entry of the catheter, had no faith in them. The trotting on horseback is not thought right, by the medical gentlemen, on the same principle.

On the 17th inst. a *caoutchouc* catheter was introduced, and allowed to remain two hours, but becoming disagreeable it was withdrawn. It was intended to try whether, by the frequent evacuation of the bladder, the obstruction would be removed or discouraged.

The patient died some time after the receipt of this account.

CASE XVII.

THE following Case shews, that in an advanced age, the pressure of the urine against the mammæ of the kidneys for a short time, in some constitutions, stops the secretion of that fluid, and death very soon is the consequence.

A gentleman, 80 years of age, had, when 77, a great frequency in making water, and consulted me upon the supposition, that there was stricture in the urethra. He was a fat heavy man, rode a great deal on horseback, and lived much above par. I explained to him that he had got beyond the age of having strictures, and that his complaint was a fullness at the neck of the bladder. I desired him to live moderately, to be cupped upon the loins, and let me see

him again. I was not aware, at that time, of riding gently being so hurtful in this disease, and gave him no caution respecting it. He called upon me in two days, and said he was perfectly well. The following year, about the same month, his complaint returned upon him, and was relieved by the same means. At the age of 80, while in the country, he had a similar attack, which was treated by the use of internal medicines : from a prejudice many medical practitioners have gone into against bleeding at that age, he was not bled. In the beginning of this attack his urine was passed in very small quantities, and although he probably never emptied the bladder, the quantity voided was not less than usual. He had gone on from bad to worse, for nearly a fortnight, when I was consulted by letter. I recommended that a flexible gum catheter should be introduced into the bladder, and retained there.

The following is the account of the surgeon who had the management of his complaint. Immediately upon receiving your letter, I introduced a flexible gum catheter, of the largest size, with tolerable ease, and drew off the water (the quantity is not mentioned); the instrument was kept in, and by taking out the peg, the bladder was emptied as often in the day as the sensations of the patient required. The medical attendant did not remain with him. In the evening he complained of having rather more pain, and passed an indifferent night: the whole of the next day the uneasiness was progressively and gradually increasing, and he did not experience the same relief from drawing off the water. In the following night, the surgeon says, he was sent for, and found his patient in the utmost torture, for the last six hours having passed no water, but an involuntary oozing by the side of the instrument; there

was a violent pulsating feel at the neck of the bladder, and tension over the whole of the lower part of the abdomen. Under these circumstances he withdrew the catheter, the eyes of which had been stopped up with mucus. The removal of the instrument relieved all the symptoms of irritation, and with the assistance of an opiate, the patient slept five or six hours ; after which the catheter was passed, and drew off 8 ounces of water, followed by thick mucus and shreds of coagulable lymph. Afterwards the urine was drawn off twice a day, and with the aid of 25 drops of laudanum he has passed four very tolerable nights ; but the quantity of urine secreted is very much diminished, not being more than a pint and a quarter in 24 hours. He is become very much emaciated, his memory very imperfect, and his countenance is quite changed. In this state he gradually became weaker, and all his

symptoms increased upon him, and in a few days he died.

The immediate cause of death, in this case, was evidently the want of secretion of urine ; and if, in the early stage of the complaint, before I was consulted, the catheter had been passed, and the bladder not allowed to be distended, the pressure of the urine against the *mammæ* of the kidneys would not have taken place.

CASE XVIII.

Case of Ulceration of the Middle Lobe, which might have been prevented, if properly treated at the Commencement.—The statement is in the form of a Letter.

I AM, at present, attending a gentleman, (formerly of the medical profession) who is anxious for your advice, in the hopes you will be able to recommend something that will relieve the distressing symptoms he is now labouring under, from a disease of the prostate gland.

He is about 65 years of age, has had two very severe attacks of inflammation of the prostate gland, attended with suppression of urine. The first about seven, and the

second three years ago. They were removed by constantly drawing off the water as long as the retention continued, which was for a considerable time in each attack, by bleeding, warm bath, fomentations to the hypogastric region and perinæum, opium by the mouth and in clysters, cicuta, uva ursi, &c. Since the last attack he has been able to pass the catheter himself, and has often had occasion to use it, sometimes two or three times in the same week, and by that means has kept himself tolerably comfortable, by checking inflammation in its commencement. He has always a difficulty in voiding his urine, which is in small quantity, not more than two or three ounces, excepting at night; when sometimes he sleeps an hour extraordinary, the quantity is accumulated, and always requires the use of the catheter. Since the beginning of this year, after riding in a

carriage, or walking more than usual, the water has frequently been slightly tinged with blood. Of late, all these symptoms have become very much aggravated.

On the 18th of August last I was called to see him: he had had three severe rigors since the 16th, succeeded by hot fits, and had at that time considerable fever; his face flushed, tongue white and dry, his pulse quick with a considerable degree of hardness, and almost incessant irritation at the neck of the bladder, with a frequent inclination to void his urine, and great pain in passing it. For the first few days he was bled twice from the arm, twice by leaches to the perinæum, used the warm bath, fomentations to the hypogastric region and perinæum, taking freely of mucilaginous drinks, as gum tragacanth, almond emulsion, &c. Five grains of Dover's powder were given every four hours, and

gradually increased to seven grains, and forty drops of tinct. opii, with fifteen of vin. antimon. at bed time, using occasionally fifty drops of tinct. opii when the irritation was much increased: the bowels were daily opened by castor oil. After the few first days the fever began gradually to subside, and the pulse came down to 75. The water became turbid, and of a milky appearance, and after standing a short time deposited a white matter, which upon examination proved to be perfect pus. Although the symptomatic fever and inflammatory symptoms were apparently subsided, still the irritation at the neck of the bladder continued unabated. I passed the gum catheter with the intention of letting it remain there, thinking it might, perhaps, prevent the water coming in contact with what I began to suspect was an ulcerated surface, from the great discharge of matter that had taken place; but

the irritation became so great, I was obliged to withdraw it almost immediately. The Dover's powders were continued, with a suppository of five grains of extract. cicut. and two of opium every four or five hours, occasionally taking forty drops of tinct. opii by the mouth, or fifty in an enema. Once in the 24 hours he took as much as 220 drops. In a consultation with two physicians, it was agreed the opium should be given in the solid form, two grains every six hours, with two drams of the uva ursi in the day, occasionally using an enema with fifty drops of tinct. opii on a suppository of the cicuta and opium. This has been continued down to the present time ; but still the irritation continues most violent, so as almost entirely to prevent sleep. The straining often produces tenesmus, with a strong forcing and bearing down in the neck of the bladder immediately after voiding the water ; there

is occasionally, too, a sort of stinging pain in the glans penis, and sometimes a tenderness in the perinæum, on first sitting down, or suddenly turning in bed.

This patient died soon after.

CHAPTER VIII.

ON THE ENLARGEMENT AND PROJECTION OF
THE RIGHT LATERAL LOBE INTO THE
BLADDER.

IN the first volume I stated, that the enlargement of the left lateral lobe sometimes extends itself so as to project into the cavity of the bladder, and several engravings illustrate the appearances the parts put on when that takes place. I have now to state, that in two instances, I have seen a similar enlargement of the right lateral lobe; and it is of no small importance that this fact should be known to the practitioner, since as, in the former volume, some pains were taken to prove the great advantage of passing the catheter down upon the left side, as in that way it would

more readily get into the bladder; so, in cases of enlargement of the right, the same advantage is to be taken by passing the instrument down upon the right side; and when it is known that such an enlargement has been met with by others, it will induce the surgeon, after trying gently on the left side, to go immediately to the right, without persevering in further trials on the same side.

SECTION I.

*Cases to explain the Symptoms produced by
the Enlargement of the right lateral Lobe.*

CASE XIX.

A GENTLEMAN, about 70 years of age, in the year 1811, first experienced some difficulty in passing his water, and had a frequent inclination to do so. This symptom gradually and slowly became very troublesome, and on the 14th of November, 1814, a complete suppression took place. An attempt was made to draw off the water, but great difficulty was met with at the neck of the bladder before the instrument could get into its cavity, but when it reached it, more than two quarts of water were drawn off. Next day, as no water passed,

the catheter was again introduced, and after emptying the bladder, was allowed to remain there for a few days, after which it was withdrawn, and he made by his natural efforts a certain quantity of urine, but did not empty the bladder. From this time the catheter was introduced every evening, and allowed to remain in the bladder during the night, and was withdrawn in the morning. Under this treatment, the quantity of urine which was drawn off by the catheter, immediately after he had made water by his natural efforts, diminished, and about the middle of January, 1815, it was reduced to two ounces, and the use of the catheter was discontinued. He now made water without difficulty, and the irritation in the bladder after that time was trifling. In the beginning of the following month, the irritation in the bladder having returned, the use of the catheter was again had recourse to, and when

the instrument was introduced, immediately after the patient had made water, $5\frac{1}{2}$ of urine were found in the bladder. The catheter was now kept in the bladder at night, and withdrawn in the day. The average quantity of urine which the bladder did not expel, was from three to six ounces, but once, after the patient having been exposed to the effects of cold, was 14 ounces. The bladder had become more irritable, admitting of less distention, and occasionally he complained of considerable pain. In the beginning of April, hæmorrhage took place through the urethra: it came on two hours before the usual time of passing the catheter; it continued nearly seven hours, and not less than three pints of apparent blood came away; and as equal parts of blood and urine form a coagulum, one half of this quantity was probably blood. On the following day the bladder, as felt through the parietes of the

abdomen, was much distended, and a large quantity of bloody urine was drawn off. After this the catheter was generally allowed to remain in the bladder, being occasionally removed for a few hours at a time. There were two or three returns of the hæmorrhage to a small extent: the patient's tongue became brown, and three weeks after the hæmorrhage had taken place, he died exhausted.

On inspecting the bladder after death, its coats were found to be considerably thickened, which is almost always the case when the internal membrane becomes very irritable, the inflammation extending itself from that membrane to the muscular coats. The internal membrane had three rows of small punctures, with intermediate abrasions, nearly equally distant from each other on the posterior surface, either produced by the point of the instrument at the time of being passed, or while lying in the empty

irritable bladder, after the urine had been evacuated, and the coats acting forcibly upon it. From these punctures the blood probably flowed, when the hæmorrhage took place, since it happened when the bladder was distended, and not at the time the catheter was passed. The distention of the bladder, by opening these punctures, would naturally make them bleed, and the blood, by mixing with the urine, would be less disposed to coagulate, so as to admit of blood flowing for seven hours : this is a circumstance of importance, since it is a distinguishing mark between blood coming from the prostate gland, in which case it does not in general mix with the urine, but either precedes or follows it. In this case, drawing off the water, would have put a stop to the hæmorrhage, the contraction of the bladder shutting up the orifices of the vessels from which the blood

was discharged, in the same manner as in flooding from the uterus, bringing away the placenta, allows the uterus to contract, and by doing so, closes the veins at the fundus of the uterus.

The right lobe of the prostate gland had a process of a cylindrical form, projecting into the bladder, which is very unlike the projections, from that gland, usually met with. This projection not being directly upwards, came rather before the middle lobe, which was only prominent in a small degree. The surface of the membrane covering the middle lobe, as well as that covering the projecting process of the right lateral lobe, was considerably abraded, having a shaggy appearance. There was a similarly abraded surface all along the course the catheter must have taken, from the verumontanum to the cavity of the bladder, and from

thence it appeared to have extended to the lining of the bladder itself, which had a soft, pulpy, tender texture, very different from that of healthy membrane. Vide Plate III.

CASE XX.

A GENTLEMAN, 83 years of age, of sedentary habits of life, had, for upwards of thirty years, considerable difficulty in passing his urine, which was voided frequently, and in small quantities at a time. At the beginning, these symptoms were treated as stricture, without any benefit. He had also taken a variety of medicines under different physicians, with as little advantage. Under the notion of his having a stricture, he consulted me, but the urethra was ascertained to have no disease. Upon examination by the flexible gum catheter, the bladder was found empty, and there was nothing like calculus to be felt. I therefore decided upon the disease being an irritable bladder, attended with a similar

affection of the rectum, and that the one disease aggravated the other. Opiate glysters, and suppositories, gave him so little relief, that he could not be induced to persevere in their use.

Within the last five years, when 79, the disease had grown worse, attended with pain in the course of the urethra and bladder, and a distressing sense of fulness in the rectum. He was, at this time, under the care of Mr. Ewbank, who attended him till he died. His rest was disturbed by getting up eight or ten times in the night to make water, the quantity seldom exceeding a table-spoon full. There was the same frequency during the day, and the impulse was irresistible. He hardly ever succeeded in emptying the lower bowels, except by the use of purgative medicines: the fæces came away in small hardened masses, like cherry-stones, and the effort required to void them, always brought

away more urine than was passed at any other time. The prostate gland was readily felt per anum, in a very enlarged state. As he seemed now not to empty his bladder, a flexible gum catheter was passed on the 12th of February, 1812: it met with no obstruction, and nearly a pint and half of urine was drawn off. At ten o'clock at night this operation was repeated, and a pint drawn off. He only made water twice in the interval; he had a better night than for many years. The water was now drawn off three times a day, and he had seldom occasion to void it in the intervals. He tried once having it drawn off only at night, but suffered so much from the accumulation in the bladder, that he gladly returned to having it done three times in the 24 hours. He died on the 18th of April, in the same year.

On inspecting the body, the kidneys were both enlarged to three times their natural

size ; that of the right side was soft in its texture, and the pelvis contained pus mixed with urine.

The coats of the bladder were unusually thin, which is explained by the bladder in the early stages of the disease, emptying itself without difficulty.

The right lobe of the prostate gland projected considerably into the cavity of the bladder, so as, in some respects, to appear to have come into the place of the middle lobe, which was pushed a little to the left side.

It was this large rounded projection, which prevented the third lobe from shutting the orifice of the bladder, so that in this case, in the early stages, instead of a suppression, there was a disposition to leakage, and the parts were kept in an irritable state, producing great frequency in making water. This large lobe pressing also upon the rectum, kept up a disturb-

ance there, and prevented the fæces from being freely evacuated. These circumstances also explain the catheter meeting with no obstruction at any period of the disease, even when he was unable to empty his bladder. The weight of this enlarged lobe, in the latter stages of the disease, pulled the bladder backwards, behind the tumor, and when the bladder had got into that situation, it is probable, that the suppression first came on, and all the symptoms in the rectum were so much aggravated by the increased pressure upon it. Vide Plate IV.

CHAPTER IX.

CASES OF IRRITATION AT THE VERUMONTANUM, KEPT UP BY DISEASE IN THE NEIGHBOURING PARTS.

IRRITATION at the verumontanum is so distressing a complaint, although unattended with much alteration of the structure of the parts affected, and so difficult to be removed, that in the first volume, I thought it right to give this affection a place among the diseases of the prostate gland, as its symptoms are sometimes connected with them, and when produced by other complaints, it is too often referred to a supposed disease in that gland. I wish, in the present volume, to add something

upon this subject, with a view, as far as I am able, to throw more light upon it, by shewing that it is kept up by causes in general not suspected, and some of these within the reach of removal.

The affections of the neck of the bladder must occasionally interfere with the actions of that viscus, although, in general, they are confined to the verumontanum, and its neighbourhood. When they do so, great frequency of making water is an attendant symptom, during the violence of the attack, and from this circumstance, the disease by many is considered as a disease of the internal coat of the bladder, which prevents the bladder from relaxing, so as to acquire its usual capacity.

Such affections must also occasionally bring on spasmodic action upon the sphincter vesicæ, attended with great pain, and in this respect, induce the surgeon to consider that muscle to be the seat of the

disease, whereas, its being affected, is only a secondary symptom.

These errors, when committed, lead to much mischief, since they induce the practitioner to adopt modes of practice by much too violent for the present irritated state of the parts.

To illustrate this, when the sphincter vesicæ, from accidental cold, is brought into a spasmodic state, and all the surrounding parts are in health, passing a large soft bougie once a day, for two or three times, shall, by gradually extending the muscular fibres, and drawing them out of the state of cramp which they had got into, entirely remove the complaint, but in a confirmed irritability at the verumontanum, too frequently the same practice shall aggravate all the symptoms, although little pain was experienced in the introduction.

When there is not any spasm at the neck

of the bladder, but in the urethra, for the one is frequently mistaken for the other : passing a soft bougie, so as to relax the temporary contraction of the urethra, without going into the bladder, almost always gives temporary ease.

Spasm in the neck of the bladder, may be distinguished from those in the urethra, by the severer pain in expelling the last drops of the urine, and when a bougie or catheter is passed, there is a disposition to draw the instrument further in, and to do so with considerable force.

When the complaint in the bladder, in consequence of there being a frequency of making water, is supposed to be a contracted bladder, the surgeon whose mind has taken that direction, will recommend injecting the bladder with warm water, so as gradually to enlarge its capacity, a practice which, in some cases, may undoubtedly be followed with impunity, and has been

employed with advantage, when a stone in the bladder could not be felt, in bringing it down to the neck of the bladder, but in no other circumstances that I am aware of; but in this particularly irritable state of the muscles, the consequence of such injection is very serious; for if the smallest quantity is thrown in beyond what the bladder can accommodate itself to, an increased spasm is brought on, and the coats of the bladder give way, so that a rupture is produced. An instance of this kind has occurred, and the pain at the moment was such, as to make the patient faint away, and the consequences such as he has had several years to lament, nor is he even now relieved from them.

This irritable state of the *verumontanum* may be produced by one cause, and kept up by another, as will be seen by the Cases; and from different cases which I have met with, piles, in many instances, prevent it

from going off. Two Cases of this kind have come immediately under my own observation, in which the removal of the piles has completely taken off the irritation, and it has not afterwards returned; one of these I shall give in detail; and if the attention is directed to this point, piles will be found a very common cause of this most distressing malady being prevented from getting well.

SECTION I.

CASE XXI.

*Case of Irritation at the Verumontanum, kept
up by Piles.*

A. B., 30 years of age, immediately after having a connection with a woman, set out upon a journey on horseback, and soon after was attacked with a violent and most exquisite tingling, which seized the neck of the bladder, coming on about an hour after making water, and continued till he made water again; it appeared to go through to the fundament. At the end of about a month, a discharge took place from the bladder. The sensations were so intolerably intense, that he had recourse to the

passing of a small bougie, which he allowed to remain in the urethra some time : this was repeated, and next day, the very distressing tingling was not felt, but afterwards the parts were in the same irritated state. The nerves of that part of the prostate gland, where the seminal vessels pass through it, were in a state of agitation not to be conceived, and the tingling was felt at the point of the penis. The great discharge of mucus from the bladder the patient is disposed to attribute to his having taken magnesia. The mucous discharge only took place once in 24 hours, when awake in the morning, at which time he was much disturbed. For these complaints he took small doses of balsam capoiba and spt. nitr. dulcis, but they did not abate the tingling, which frequently came on after making water. It was a mixed sensation of tingling and titilation, more resembling what is called the foot being asleep, than

any thing else. One day very little of it was felt; another, it seized the bladder, and was more distressing, bringing on frequency in making water and spasm, which diminished the stream of urine, but there was neither heat nor pain. Sea bathing was now recommended, but produced no good effect. Blisters to the perinæum, repeated as soon as the parts could bear them, produced no favourable result, so as to encourage a prosecution of that mode of treatment. Previous to the use of the blisters there was a frequent sense of tickling about the anus, with various other uneasy and unpleasant sensations, but since they were applied, the irritation has been materially increased, producing a sense of pricking in that part. This extended at times to the urethra, with painful spasmodic twistings there, with much spasm or dragging where the blisters had been applied, and a soreness after going to stool: the

nerves in the neighbourhood were much affected, even to the sacrum. It was proposed, in this stage of the disease, to apply corrosive sublimate to the anterior portion of the urethra, so as to bring on a running, but every attempt failed to produce a discharge, and the irritation caused by it increased all the symptoms. A little tincture of euphorbium was applied to the glans penis, which blistered it slightly, but at the same time acted nearly as the blisters in perinæo had done. At this time, the principal distress was an irritation at the anus and up the rectum, particularly after having been at stool, causing a protrusion of these parts, in which the sense of pricking was intolerable. The patient had to regret, in these sufferings, that opium always disagreed with him, increasing irritation, and that all stimulating applications irritated, but never brought on a discharge. He admitted, that it was difficult to determine

the seat of sensations, but considered himself, from much cruel experience, to be enabled, in this instance, to ascertain it better than most other people, and that it passed backwards and forwards in the space between the urethra and anus, sometimes shooting forward to the end of the penis. The symptoms of irritation in the anus increased so much, as to make that the principal seat of the complaint, and a full sized bougie having passed with ease along the urethra to the neck of the bladder, proved that there was no stricture in that canal. This gentleman had now suffered for a twelvemonth under these strange distressing symptoms, and was at a distance from town, consulting me by letter. From his last accounts, referring the symptoms so much to the anus, I desired, that he would come to London, and give me an opportunity of ascertaining exactly the state of the rectum, as, till that was done,

I did not feel warranted in recommending any new mode of treatment. He accordingly came to town, and I found, upon examination, that he had the piles to a considerable degree, in all probability, very much increased by the efforts he had been accustomed to make in straining, when the irritation at the neck of the bladder was violent, and from the use of the warm hip bath, which he had resorted to in the beginning of the attack, and had since resorted to occasionally, when the pain was severe, so that the piles, which might have been in the commencement a symptom of the other disease, now became a cause of the symptoms being kept up; and I told him with considerable confidence, that the removal of the piles by an operation, would tend greatly to diminish his sufferings, if not to remove them altogether. He submitted to this operation, which, in the irritable state to which he was reduced, was a

very painful one; but after the parts had completely healed, all the symptoms which had made him suffer so severely, for more than a twelvemonth, were entirely cured.

SECTION II.

CASE XXII.

Irritation at the Verumontanum, produced by thickening of the Parts surrounding the seminal Vessels.

A. B., whose age was not known, had complained of pain, either beginning at the neck of the bladder, and running to the glans penis, or passing from the bladder up to the kidneys. This was attended with great frequency in making water. These attacks came on at very short intervals, and were more or less relieved by opiate applications to the glans penis, or opiate glysters: these only gave temporary relief, and he sunk under the constant distress which these symptoms produced.

On inspecting the parts after death, it was found that the prostate gland at its base had formed itself into a hard tumor, in which the seminal vessels had been involved, and the third lobe of the prostate gland, in its enlargement and projection into the bladder, extended more backwards than usual, and extended under the membrane of the bladder, between the openings of the ureters, raising it up, so as to form a thick ridge, upon the top of which the ureters, with their coats much stretched, opened transversely. Behind this ridge was a cavity, which appeared to be the only one in which water was contained. The internal membrane of the bladder had been much inflamed, having coagulable lymph projecting in flakes from its surface. The inflammation had extended along the internal membrane of the ureter for above an inch.

From these appearances, one set of the

symptoms belonged to the ureter and bladder, the other set to the seminal vesels, bearing a close resemblance to irritation in the prostate portion of the urethra. Vide Plate IX.

SECTION III.

CASE XXIII.

Irritation at the Verumontanum connected with enlargement of the prostate Gland.

M. B., aged 79, about two years ago began to feel some inconvenience in voiding his urine, and insensibly this inconvenience increased so as to become pain. This pain was situated about the neck of his bladder and extended along the course of the urethra. After some time, any motion of his body became inconvenient, and by degrees the smallest exertion, as of getting into an erect posture, seating himself upon a chair or turning himself in bed, distressed him exceedingly. His urine, in general, was

natural in appearance, but at times it contained some mucus; and in the course of the last two years he parted with some small calculi. This circumstance gave suspicion that there might be a larger calculus in the bladder, but M. B. objected to any examination; and when his advanced age, and when the pain which he suffered, and which was often very severe, yet was borne by him with patience, and his health did not appear to be injured by it, were considered, the necessity of an examination was not insisted on; but without such a measure the precise nature of his disease could not be ascertained. At length, the urgent necessity to pass his urine became so frequent, and the discharge of it so painful, and the smallest degree of motion of his body productive of such excessive torture, occasioning restless nights, and frequently disturbance of his whole frame, rendered it absolutely necessary that something

should be attempted for his relief, and he at last consented to an examination.

On sounding, nothing was found in the bladder; but considerable difficulty was experienced in passing the instrument. Approaching the prostate gland, the parts were exceedingly tender, and on examination per anum, the prostate gland was found to be very much enlarged. At first, the introduction of the sound or bougie was attended with considerable difficulty, and some discharge of blood, in drops, was occasioned; but by the continued use of the bougie, gradually encreased in size, the difficulty of introduction has been removed, and the discharge of blood has altogether ceased; but the appearance of the bougie, after use, shews the parts to be in an abraded state.

Since the nature of the disease has been ascertained, bougies have been in daily use, and when introduced, have been allowed

to remain from ten minutes to half an hour at a time; and this plan has had the good effect of enabling him to retain his urine for a considerable time, and to void it with greater ease, and to allow him to change his posture with much comparative freedom.

Eight days ago M. B. was seized with catarrh, of which the degree of fever was considerable, and cough frequent and distressing; and in consequence of this attack, the irritable state of the neck of the bladder has been much encreased, and the pain on discharging his urine, and on the least bodily motion, greatly augmented. Yesterday and to day, the force and frequency of his pulse have much diminished and his cough has greatly abated, and consequently, his urinary complaint disturbs him much less.

As to general management, particular attention has been given to the state of his

bowels, and castor oil or small portions of Barbadoes aloes occasionally used. When pain at the neck of the bladder has been very acute, emollient glysters or warm bath have given relief, and sometimes opium has been resorted to, but anodynes have uniformly been attended with unpleasant effects. His urine has frequently of late had a tendency to become alkaline, and to occasion more pain, but the internal use of nitric acid affords a ready and an easy remedy for this inconvenience.

M. B. has uniformly enjoyed a good appetite, and his beverage has been Madeira or Sherry wines largely diluted with water.

The result of this case I have not been made acquainted with.

17th March, 1807.

APPENDIX.

APPENDIX.

DISEASES of the prostate gland becoming, in many instances, the cause of stone, and the presence of a stone in the bladder frequently proving the cause of enlargement of the prostate gland, which very enlargement removes all the common symptoms of stone, by preventing it from falling upon the orifice of the bladder, I have considered, that the republication of Professor Brande's Letter to the Author on the structure of calculi, and the Author's observations on it, published in the Philosophical Transactions for the year 1808, might not

be out of place in the present Work, and would prove a valuable addition to it. With this view, I have obtained the necessary permission from the President of the Royal Society, and from Professor Brande, for that purpose.

This Paper of Professor Brande's, and the Observations annexed to it, form a very good introduction to an account of a very extraordinary attempt made by General Martin, to destroy a stone in his bladder, and of the bad effects that were produced by the use of so much violence upon the prostate gland, with which this Appendix is concluded.

*A Letter from Mr. WILLIAM BRANDE to
EVERARD HOME, Esq. on the differences
in the Structure of Calculi, which arise from
their being formed in different Parts of the
urinary Passages ; and on the Effects that
are produced by the internal use of solvent
Medicines.*

Read before the ROYAL SOCIETY, May 19, 1808.

DEAR SIR,

HAVING availed myself of the opportunity you procured for me, of making a chemical examination of the calculi contained in the HUNTERIAN MUSEUM, as well as those in your own collection, I herewith send you an account of what I have done.

Should the observations appear to you to throw any new light upon the formation

of calculi, I request that you will do me the honour of laying them before the ROYAL SOCIETY.

The collection which I have examined, is not only uncommonly large, but the greater part of the specimens have histories of the case annexed to them.

This circumstance enabled me not only to ascertain the situations in which the calculi were found, but likewise many of the circumstances attendant on their formation.

I have therefore endeavoured to form an arrangement upon these principles, with a view to render the subject more clear and perspicuous.

SECTION I.

Of Calculi formed in the Kidnies, and voided without having afterwards undergone any Change in the urinary Passages.

These have the following properties :

They are of a brownish yellow colour, sometimes of a grayish hue, which seems to arise from a small portion of dry mucus adhering to their surface.

They are entirely soluble in a solution of pure potash, and during their solution, they seldom emit an odour of ammonia.

When heated to dryness, with nitric acid, the residuum is of a fine and permanent red colour.

When exposed to the action of the blow-pipe, they blacken, and emit a strong odour of burning animal matter, very different

from that of pure uric acid. This arises from a variable proportion of animal matter which they contain, and which occasions the loss in the analysis of these calculi. Its relative quantity is liable to much variation, as may be seen from the following statements.

A calculus from the kidney, weighing seven grains, was dissolved in a solution of pure potash. A quantity of muriatic acid (rather more than sufficient for the saturation of the potash) was added, and the precipitate of uric acid thus obtained, weighed, when dry, 4.5 grains. No other substance, except animal matter, which was evident on attempting to obtain the muriate of potash, could be detected, consequently the composition of this calculus was as follows :

			Grs.
Uric acid	-	-	4.5
Animal matter	-	-	2.5
			<hr/>
			7.0

This is the largest proportion of animal matter which I have met with.

A small calculus from the kidney, weighing 3.7 grains, afforded by a like treatment of 3.5 grains of uric acid, so that it was nearly a pure specimen of that substance.

The largest calculus of this kind which I have examined, weighed seventeen grains; much larger ones have been found, but there is no evidence of their not having remained in the urinary passages for some considerable time. Thus Dr. Heberden mentions one weighing twenty-eight grs.*

It often happens that the ingredients are not united together so as to form a calculus, but are voided in the state of a fine powder, commonly termed sand. This consists either of uric acid, or of the ammoniaco-magnesian phosphate, alone, or with the phosphate of lime.

* Comment. on the Hist. and Cure of Diseases, 3d, edit. p. 88.

I am induced to believe, that the last mentioned substances, although the production of the kidneys, and held in solution, are never met with in a separate state till the urine has been at rest, and therefore, calculi from the kidneys are never composed of the phosphates. In a few instances, calculi from the kidneys, composed of oxalate of lime, are voided ; but this is a very rare occurrence : of three preserved in the HUNTERIAN Collection, two are extremely small and hard, having an appearance of being made up of several smaller calculi, of a dark brown colour. The third is of the size of a small pea, its surface smooth, and of a gray colour, not very hard.

SECTION II.

*Of Calculi which have been retained in the
Kidney.*

WHEN one or more of the calculi described in the preceding Section, are detained in the infundibula or pelvis of the kidney, it frequently happens, that they increase in that situation to a considerable size.

This increase is of two kinds.

1. Where there is a great disposition to the formation of uric acid, the calculus consists wholly of that substance and animal matter, so as frequently to form a complete cast of the pelvis of the kidney.

2. Where there is less disposition to form uric acid, the external laminæ are composed of the ammoniaco-magnesian phosphate, and phosphate of lime.

In one instance, a small uric calculus had been deposited in the kidney, in such a situation that its upper surface was exposed to a continual stream of urine, upon which beautiful crystals of the triple phosphate had been deposited. It would therefore seem, that under common circumstances, a stream of urine passing over a calculus of uric acid, has a tendency to deposit the phosphate upon it.

SECTION III.

Of Calculi in the urinary Bladder.

CALCULI met with in the bladder are of four kinds.

1. Those formed upon nuclei of uric acid, from the kidney.

2. Those formed upon nuclei of oxalate of lime, from the kidney.

3. Those formed upon sand or animal mucus, deposited in the bladder.

4. Those formed upon extraneous bodies introduced into the bladder.

They were arranged under the following divisions.

1. Calculi, which from their external appearance, consist chiefly of uric acid.

These calculi vary in colour from a deep reddish brown, to a pale yellowish brown.

They are either entirely soluble in a solution of pure potash, or nearly so.

During their solution they frequently emit the odour of ammonia.

When acetic acid is added to their alkaline solution, a precipitate possessing the properties of uric acid is obtained.

2. Calculi, composed chiefly of the ammoniaco-magnesian phosphate, or of phosphate of lime, or of mixtures of the two.

These calculi are externally of a whiter appearance than the former.

Some perfectly white, others gray, occasionally exhibiting small prismatic crystals upon their surface; others again soft and friable, a good deal resembling chalk. They are further characterised by their solubility in dilute muriatic acid.

3. Calculi, containing oxalate of lime; commonly called mulberry calculi.

These are distinguished by the difficulty with which they dissolve in dilute acids, by

their hardness, and by leaving pure lime, when exposed to the action of the blow-pipe.

In the examination of these calculi, I was struck with the small number of those strictly belonging to the first division, having been led, from the account of Fourcroy and Vauquelin,* and the experiments of Dr. Pearson,† to believe that calculi, composed of pure acid, were by no means unfrequent.

The greater number of the calculi examined by the former chemists, are stated to be completely soluble in the fixed alkaline leys; and of three hundred examined by Dr. Pearson, a large proportion is said to consist of uric acid.

The following is a statement of the composition of the different calculi found in the bladder which I have examined.

* *Annales de Chimie*, xxxii. 218.

† *Philos. Trans.* 1798. p. 37.

16 were composed of uric acid.

45 ————— uric acid with a
small relative
portion of the
phosphates.

66 ————— the phosphates,
with a rela-
tively small
proportion of
uric acid.

12 ————— of the phosphates
entirely.

5 ————— of uric acid, with
the phosphates
and nuclei of
oxalate of lime.

6 ————— chiefly of oxalate
of lime.

150

To injure these calculi as little as pos-

sible, they were carefully cut through with a fine saw, and a portion of the whole cut surface removed by a file; in this way all the different ingredients of the calculi were obtained.

In the experiments upon uric calculi from the bladder, I found, in most instances, a far more considerable loss in attempting to obtain their pure uric acid, than in the kidney calculi, which led me to suppose that they contained urea, and that the presence of this substance, with some of the salts of urine, and with small portions of the ammoniaco-magnesian phosphate, was the cause of the occasional evolutions of ammonia, when treated with the fixed alcalies, and of their easy solubility in those substances.

To determine this point, a small calculus, weighing twenty-five grains, and of the species commonly supposed to consist of

urate of ammonia,* was digested for two hours with water in a very moderate heat. The water, which had assumed a pale yellow colour, was filtered off, and fresh water added to the residuum three successive times, when it appeared, that every thing soluble in that fluid was separated. The insoluble part of the calculus being now carefully dried and weighed, was found to have lost 5.5 grains.

The aqueous solution was evaporated by a gentle heat, nearly to dryness, and a substance was obtained, having all the properties of urea, in combination with a small portion of muriate of ammonia, and of the ammoniaco-magnesian phosphate.

Sixty grains of another calculus of a

* Fourcroy observes, that urate of ammonia is easily detected by its rapid solubility in the fixed alcalies, and the odour of ammonia, which is perceived during its solution.—Vide Thomson's Syst. of Chem. vol. v. p. 691.

considerable size, supposed from a superficial analysis, to consist of nearly pure urate of ammonia, were digested at a low temperature in one ounce of alcohol. In an hour the alcohol was decanted off, and fresh portions were added successively, as long as it appeared to act upon the calculus, which after having been carefully dried in a temperature below 212° , weighed 54.8 grains, so that 5.2 grains had been taken up by the alcohol.

On evaporating the alcoholic solutions, a substance was obtained, having all the properties of urea, with a small portion of saline matter, probably muriate of ammonia, as by the addition of potash, a slight ammoniacal odour was perceptible; its quantity however was too minute for accurate examination.

The remaining portion of the calculus, weighing 54.8 grains, was treated with

small portions of acetic acid, by which 6 grains of the ammoniaco-magnesian phosphate were obtained.

The part of the calculus remaining after this treatment, weighing 48.8 grains, was perfectly soluble in a solution of pure potash; it emitted no ammoniacal odour when acted upon by the alkali, and possessed the properties of pure uric acid.

The following therefore is the composition of this calculus.

	Grains.
Urea, and muriate of ammonia	5.2
Ammoniaco-magnesian phosphate	6
Uric acid - -	48.8
	<hr/>
	60.

From these and many similar experiments upon other calculi, hitherto generally supposed to consist of urate of ammonia, I am induced to believe, that the evolution of ammonia depends in all instances

upon the decomposition of the ammoniacal salts contained in the calculus, more especially of the ammoniaco-magnesian phosphate, and that no substance which can be called *urate of ammonia*, exists in calculi.

The mulberry calculus (oxalate of lime) I have but rarely met with. In those preserved in the Hunterian Collection, there is a large relative proportion of phosphate of lime, and of uric acid. The purest of them afforded

		Grains.
Oxalate of lime	-	65.
Uric acid	- -	16.
Phosphate of lime	-	15.
Loss in animal matter	- -	4.
		<hr/>
		100.

When calculi of the urinary bladder increase to a very large size, they are generally composed of two or even three of the above mentioned varieties, the ammo-

niaco-magnesian phosphate being situated externally, and in the greatest abundance.

The largest calculus which I have seen weighed, when recently removed from the bladder, twenty-three ounces and twenty-six grains. It consisted of a large mulberry or oxalate of lime calculus, the nucleus of which was uric acid, surrounded by a considerable quantity of the ammoniaco-magnesian phosphate in a very pure state.

Another very large calculus, weighing fifteen ounces and a half, consisted of a nucleus of uric acid, enveloped in the ammoniaco-magnesian phosphate, not however pure, but intersected by several laminæ of uric acid.

Four distinct substances are extremely rare in calculi: I have seen one in which the uric acid, the ammoniaco-magnesian phosphate, the phosphate of lime, and the

oxalate of lime, were all in perfectly separate and distinct layers,

Four calculi, having the following extraneous substances for their nuclei were examined.

1. A common garden pea.
2. A needle.
3. A hazle nut.
4. A part of a common bougie.

In the two first instances, the calculous depositions were of a pale gray colour, inclining to white; soft and friable in their texture, and entirely soluble in muriatic acid.

The composition of the first was as follows:

	Grains.
Phosphate of lime - -	65.
Ammoniaco-magnesian phosphate	28.
Loss - - -	7.
	<hr/>
	100.

			Grains.
Of the second ;			
Phosphate of lime	-		45.
Ammoniaco-magnesian phosphate			38.
Oxalate of lime	-	-	12.
Loss	-	-	5.
			<hr/>
			100.*

The deposition of calculous matter upon the bougie was covered with blood, and in very small quantity, the bougie having been removed by an operation soon after it had passed into the bladder. It appeared to consist chiefly of phosphate of lime.

The incrustation upon the hazel nut was also destitute of uric acid.

* It appears, that in this case, there had been an accidental disposition to the formation of oxalate of lime.

SECTION IV.

Of Calculi of the Urethra.

ALL those that were examined, had escaped from the bladder while very small, and had afterwards lodged in the membranous part of the urethra, where they had increased in size, and formed a cavity in which they were more or less embedded.

Two of these calculi were broken.

The fragments consisted, in one instance, of ammoniaco-magnesian phosphate, and phosphate of lime, with a small portion of uric acid: and in the other, the fragments were composed entirely of the ammoniaco-magnesian phosphate.

The third calculus was of a very remarkable appearance; its form being that of a

perfect sphere, about half an inch in diameter. It was coated with small but very regular crystals of the triple phosphate in its purest state. On account of the singularity of the form and external appearance of this calculus, it was not sawn through; the nucleus, in all probability, is a small kidney calculus, which lodging in the urethra, has become coated with triple phosphate.

SECTION V.

Analysis of Calculi from other Animals.

1. THE HORSE.

A. *From the kidney.*

A very large calculus, from the kidney of a horse, was composed of

Phosphate of lime	-	76
Carbonate of lime	-	22
		<hr/>
		98.

B. *From the bladder.*

This calculus was also of a large size, its weight, when perfectly dry, nine ounces and a half, its external surface very irregular, of a reddish brown colour, and covered with minute crystals of the ammoniaco-magnesian phosphate. On making

a section of it, the internal structure exhibited a radiated appearance, and was of a light brown colour. It consisted of

Phosphate of lime	-	45.
Ammoniaco-magnesian phosphate		28.
Animal matter	- -	15.
Carbonate of lime	-	10.
		<hr/>
		98.

In another case, the bladder of a horse was found to be nearly full of sand, the composition of which was as follows :

Phosphate of lime	- -	60.
Carbonate of lime	- -	40.
		<hr/>
		100.

2. THE OX.

A number of small calculi, from the size of a pea downwards, are not unfrequently found in the bladder of the ox. Those in the Hunterian Collection are of a pale brown colour, and of the size just

mentioned ; some of them have the mulberry appearance.

They consist of carbonate of lime and animal matter, which last substance retains the form of the calculus, after it has been acted upon by diluted acids.

3. THE SHEEP.

A calculus from the kidney of a sheep was composed of

Phosphate of lime	-	72.
Carbonate of lime	-	20.
Animal matter	- -	8.
		<hr/>
		100.

4. THE RHINOCEROS.

The urine of this animal is exceedingly turbid at the time it is voided, and when allowed to remain at rest, deposits a very large proportion of sediment, which consists of carbonate of lime, with small portions of phosphate of lime and animal matter.

5. THE DOG.

A large calculus from the bladder of a dog twenty years old, weighing sixteen ounces, was extremely hard, and of a gray colour; when cut through, it exhibited a nucleus about the size of a hazel nut, partly made up of concentric layers of phosphate of lime, and partly of crystals of the ammoniaco-magnesian phosphate. The part of the stone surrounding the nucleus consisted of

Phosphate of lime	-	64.
Ammoniaco-magnesian phosphate		30.
Animal matter	- -	6.
		<hr/>
		100.

Sand taken from a dog's bladder was of a gray colour, and contained

Carbonate of lime	- -	20.
Phosphate of lime	- -	80.
		<hr/>
		100.

6. THE HOG.

A calculus from the bladder of this animal weighed nineteen drachms; it was of a pale gray colour inclining to white, and so hard, that it was with difficulty cut through. Its internal structure was uniform, and there was no appearance of a nucleus. It was composed of

Carbonate of lime	-	-	90.
Animal matter	-	-	10.
			<hr/>
			100.

7. THE RABBIT.

A calculus from the rabbit's bladder weighing four drachms, was of a dark gray colour, and appeared as if composed of several smaller calculi. It consisted of

Phosphate of lime	-	-	39.
Carbonate of lime	-	-	42.
Animal matter	-	-	19.
			<hr/>
			100.

SECTION VI.

General Inferences.

It appears from the preceding observations, that calculi formed in the kidneys, and immediately voided, are almost always composed of uric acid; and that the phosphates are very frequent ingredients in calculi of the bladder, more especially in those, which, from their situation, have been exposed to a continual current of urine: they also uniformly are deposited upon extraneous substances introduced into the bladder, but appear never to form small kidney calculi.

In what is commonly called a fit of the gravel, a small uric calculus is formed in the kidney, and passes along the ureter into the bladder.

It is found from observation, that for some time after a stone has passed from the kidney, the urine is generally unusually loaded with uric acid, and deposits that substance upon the nucleus now in the bladder. When this period, which is longer or shorter in different individuals, has elapsed, the subsequent addition to the calculus consists principally of the phosphates.

Where the disposition therefore to form uric acid in the kidneys is very great and permanent, the calculus found in the bladder is principally composed of uric acid ; but where this disposition is weak and of short duration, the nucleus only is uric acid, and the bulk of the stone is composed of the phosphates.

Where the increased secretion of uric acid returns at intervals, the calculus is composed of alternate layers of uric acid and the phosphates.

Other small calculi being formed in the kidney, make their way into the bladder, and afford fresh nuclei; so that several calculi are sometimes found in the same bladder, and their composition is usually nearly the same.

In other cases it happens, that a constant increased secretion of uric acid is going on from the kidneys, only in small quantity, which will be more uniformly mixed with the phosphates deposited in the bladder, and where the uric acid predominates, the species of calculus denominated improperly, *urate of ammonia*, will be produced.

We are entirely ignorant of the cause of the formation of the oxalate of lime, or mulberry calculus. I have frequently looked for oxalate of lime in the urine of calculous patients, but have never been able to detect it, and as it does not exist in healthy urine, it must be regarded as a morbid secretion. Its mode of formation

seems to resemble that of uric acid, since small kidney calculi, composed of oxalate of lime, have in a few instances been voided ; and in these cases, as far as my own enquiries go, the persons have been much less liable to a return of the complaint, than where uric calculi have been voided.

In some rare instances we meet with calculi of the bladder which are destitute of uric acid, and of oxalate of lime, the nucleus being composed of a little loosely agglutinated ammoniaco-magnesian phosphate, and the whole calculus consisting of that substance, with variable portions of phosphate of lime : in two cases I have met with calculi of this kind, composed of the triple phosphate only : they seem to be entirely formed in the bladder.

Having taken this short view of the formation of calculi, I shall now enquire into the action of solvents, employed either with

a view of effecting their solution, or of preventing their formation and increase.

Solvents are of two kinds.

1. Alkaline. 2. Acid.

In the exhibition of these, the practitioner is usually guided by the chemical composition of the calculous matter voided by urine.

The different kinds of gravel voided by persons labouring under calculous complaints, may be classed in two divisions.

1. *Uric acid*, either in a pure state, or with a very small proportion of the phosphates.

2. *The phosphates*, either pure, or with a small proportion of uric acid.

The first species, which generally appears in the form of minute crystalline grains, of a reddish brown colour, or of an impalpable brown powder, is either entirely soluble in pure alkaline solutions, not emitting an ammoniacal odour, in which

case it consists of pure uric acid : or it does emit an ammoniacal odour, and is not entirely soluble, in which case it contains the triple phosphate of ammonia and magnesia.

When this substance is observed in the urine, the alkalies are recommended. They are exhibited either in a pure state, or as carbonates, and in each instance the uric sediment generally diminishes rapidly, and during the continued use of alkaline medicines, occasionally disappears altogether.

It however frequently happens, that the matter voided, is not diminished in quantity by the use of alkalies, but that its form and composition are altered, and that it assumes the appearance of a gray powder, and is composed of uric acid with variable portions of the ammoniaco-magnesian phosphate.

From these facts therefore, it cannot be doubted, that the internal exhibition of

alkalies often prevents the formation of uric acid, and hence must likewise prevent the increase of a calculus in the bladder, as far at least as uric acid is concerned ; but it has also been supposed, that the alkalies are capable of acting upon the stone itself, and even of effecting its complete solution. It is true, that if we immerse a calculus, composed of uric acid, in a dilute solution of caustic alkali, that it will be slowly acted upon, and after some time entirely dissolved. If however we attend to what would take place in the body, we shall find the circumstances very different.

That alkaline carbonates and sub-carbonates exert no action upon uric acid, I consider to be completely established, both by the experiments of several eminent chemists, and those I have myself made upon the subject ; and as there is at all times a quantity of uncombined acid in the urine, it follows, that although the alkali may

arrive at the kidnies in its pure state, it will there unite with the uncombined acid, and be rendered incapable of exerting any action upon the calculus in the bladder. Besides phosphoric acid, the urine always contains a quantity of uncombined carbonic acid: this is proved by placing a quantity of recently voided urine under the receiver of an air pump; during the exhaustion, a large quantity of carbonic acid gas makes its escape; and when urine is distilled at very low temperatures, carbonic acid gas is given off: and also, when lime water is poured into urine, a precipitate appears, consisting of phosphate and carbonate of lime.

Lime water, on account of the insoluble compounds which lime forms with carbonic, and phosphoric acids, is even more objectionable as a solvent, than the alkalies.

It may, however, be said, that if these means prevent the increase of a calculus, material relief is afforded to the patient.

How far the exhibition of alkaline remedies can be recommended upon these grounds, will appear, when the circumstances which attend the formation of the second species of calculous sediment or deposition in the urine, are considered.

The ammoniaco-magnesian phosphate appears under two forms : it is either voided in a solid state, or in solution. In the former case it bears a good deal of resemblance to a white sand, and is frequently mixed with variable proportions of phosphate of lime. In the latter it makes its appearance after the urine has remained undisturbed for some hours in an open vessel, generally in the form of a fine pellicle, or of crystalline laminae, which when collected and dried bear some resemblance to boracic acid.

Its putting on this form is accounted for, from its being held in solution in the first instance by carbonic acid, and as this flies

off, the triple salt makes its appearance. If a portion of the urine be preserved in a phial closely stopped, the carbonic acid cannot escape, and consequently no phosphate is observed to separate. There is also a quantity of phosphoric acid present, which keeps another portion of the ammoniaco-magnesian phosphate, and also some lime (in the state of super-phosphate of lime) in solution.

It is therefore obvious, that whenever the urine is deprived of a portion of the acid which is natural to it, the deposition of the triple phosphate, and phosphate of lime, more readily takes place : this is effected by the exhibition of the alkalies.

It may therefore be asserted, that although alkaline medicines often tend to diminish the quantity of uric acid, and thus to prevent the addition of that substance in its pure state, to a calculus in the bladder ;

they favour the deposition of the phosphates.

It cannot be doubted that the alkalies reach the bladder, since in cases where large doses of sub-carbonate of potash have been exhibited, I have seen evident traces of it in the urine.

Where the phosphates only are voided, it has been proposed to dissolve the calculus by the exhibition of acids, and more especially the muriatic acid.

During the use of the muriatic acid, the phosphates are either diminished or disappear altogether; and even sometimes the urine acquires an additional acidity: a solution of that part of the calculus which consists of the phosphates might therefore be expected; but even then the nucleus of uric acid would remain, and thus a great deal of time would be lost without any permanent advantage.

I have also occasionally remarked, that during the use of acids, the uric acid reappears, and even seems to be augmented in quantity.

Attempts have been made at different times to effect the solution of calculi, by the injection of solvents into the bladder. This subject has been more lately revived by Fourcroy and Vauquelin, who, in their paper on the composition of calculi, lay down rules for its practice. Independent, however, of the impossibility of ascertaining the composition of the calculus with sufficient accuracy, it is obvious, that were the composition of the surface of the calculus known, the frequent introduction of an instrument into the bladder, and the long continuance of the process which would be necessary, even where the calculi are small, are insurmountable objections; and whenever this mode of treatment has been adopted, it has speedily been relinquished,

as it always aggravates the sufferings of the patient.

It has been shewn, that in the majority of cases, the nuclei of calculi originate in the kidneys, and that of these nuclei by far the greater number consist of uric acid; the good effects therefore so frequently observed during the use of an alkali, arise, not from any actual solution of calculous matter, but from the power which it possesses of diminishing the secretion of uric acid, and thus preventing the enlargement of the calculus, so that, while of a very small form, it may be voided by the urethra.

I am, dear Sir,

your's truly,

WILLIAM BRANDE.

*Some Observations on Mr. BRANDE'S Paper
on Calculi. By EVERARD HOME, Esq.
F. R. S.*

Read before the ROYAL SOCIETY, May 19, 1808.

THAT calculi in the human bladder are not dissolved by the internal use of alkaline medicines, is an opinion which I have long entertained, but the grounds of failure so clearly pointed out by Mr. W. Brande, were not known to me: I only knew from experience, that, to whatever extent the medicines are given, no such effect takes place. The circumstance of the exterior laminæ of calculi extracted from patients, who had persevered in a course of alkaline preparations, having been found softer than the parts towards the centre, has always

been considered as a proof of the action of the medicines upon the calculus, and led to the belief, that where the stone was small, it might be wholly dissolved. This, however, Mr. W. Brande has now proved to be a deception, and that the soft part is not a portion of the original calculus, but a newly formed substance, in which the uric acid is not deposited in crystals, but mechanically mixed with the phosphates, and the animal mucus in the urine.

Having met with cases, which confirm Mr. W. Brande's observations, it will be satisfactory to state them, as they may assist in doing away many erroneous notions generally entertained on this subject.

The opinion, that calculi in the human bladder have been entirely dissolved, has received its principal support from instances having occurred, and those by no means few in number, where the symptoms went entirely away while the patients were using

alkaline medicines, and never afterwards returned. This evidence appears to be very strong, but it will be found, from the following cases, that it is not so in reality. Since the fallacy has been detected in all the instances in which an opportunity was afforded of examining the bladder after death. Two of these I shall particularly notice, because they were published during the patient's life time, in proof of the stone having been dissolved.

Both patients were great sufferers from the symptoms of stone for many years; but when they arrived at the age of sixty-eight, or thereabout, the symptoms entirely left them. The one had been taking the saline draught in a state of effervescence, under the direction of the late Dr. Hulme: the cure was attributed to this medicine, and the case was published in proof of its efficacy. When the patient died I examined the bladder, and found twenty calculi; the

largest of the size of a hazel nut, the others smaller. It appeared, that the going off of the symptoms had arisen from the posterior lobe of the prostate gland having become enlarged (a change which it frequently undergoes about that period of life,) and having formed a barrier between the calculi and the orifice of the bladder, so that they no longer irritated that part either in the act of making water, or in the different movements of the body, but lay in the lower posterior part of the bladder without producing any disturbance. Their number prevented the pressure from being great upon any one part of the intestine immediately behind the bladder, and their motion on one another rendered their external surface smooth, and probably prevented their rapid increase. The other patient was under a course of Perry's lixivium; and when the symptoms went away he published the case in proof of the

efficacy of that medicine in dissolving the stone. I examined the bladder after death, and found fourteen calculi ; the largest of the size of a nutmeg, the others smaller. There was the same enlargement of the posterior lobe of the prostate gland, and the calculi were exactly under the same circumstances as in the former case.

In several cases, in which I have examined the body after death, calculi have been found inclosed in cysts, formed between the fasciculi of the muscular coat of the bladder, so as to be entirely excluded from the general cavity, and therefore had not produced any of the common symptoms of stone. I have seen in the same bladder, two, three, and even four such cysts, each containing a calculus of the size of a walnut.

It is a circumstance deserving notice, that in the case which gave celebrity to Mrs. Stevens's medicine, and procured her

a remuneration from Parliament, the bladder was not examined after death.

That calculi in the bladder do sometimes increase, while the patient is using alkaline medicines, is fully proved by the following examples, which also shew that the uric acid and phosphates are formed in different proportions according to the peculiarities of the constitution.

A gentleman who suffered from symptoms of stone was sounded, and a stone was found in his bladder. I put him on a course of alkaline medicines, and he voided a small compact calculus, composed of uric acid, and evidently formed in the kidney. He was desired to persist in the use of the medicines, which he did at intervals for four or five years, suffering occasionally in a slight degree, but he did not pass any more calculi. He died at the age of seventy-five. On examining the bladder, its whole cavity,) the capacity of which was

equal to a pint measure) was completely filled with soft, light, spongy calculi, three hundred and fifty in number, and of different sizes, from that of a walnut to a small pea. They were composed of a mixture of uric acid in powder, the phosphates, and animal mucus; and differed so much from the calculus voided soon after the patient began the use of alkalies, that they appear to have been formed after that period in the manner mentioned by Mr. W. Brande.

Agentleman, who was found to have a stone in his bladder, was persuaded that it was so small that it might be dissolved, and with this view he took the fossil alkali, both in its caustic and mild state, for about three months; but at the end of that period the symptoms were increased, and he submitted to have it extracted by an operation. On examining the calculus after it was extracted, the external part, for the thickness of $\frac{1}{10}$ of an

inch, was entirely composed of triple phosphate, in a state of perfect spiculated crystals, so as to present a very rough irritating surface to the internal membrane of the bladder, while the inner parts of the calculus were made up of a mixture of uric acid and phosphates, so that the alkali had prevented the formation of uric acid, but the phosphates were deposited more rapidly than before.

A gentleman, in whose urine the uric acid appears in a solid form, immediately after it is voided, has the same appearance in the urine, even when nine drachms of soda dissolved in water, impregnated with carbonic acid, are taken in twenty-four hours; so that in this instance the alkali does not even counteract the formation of uric acid.

*An Account of an Attempt made in India by
GENERAL MARTIN, to destroy a Stone in
his Bladder; written by himself the year
before his death, in which it will appear,
that the Neck of the Bladder was much in-
jured by the Instruments employed to file the
Stone, and never recovered from the effects
of the violence committed upon it.*

GENERAL Martin's case was represented by himself in his letters to his friends, dated 1791, as having effected a complete removal of a stone from the bladder, and his being restored to perfect health; and he went so far in these letters, as to recommend the means he had adopted, to those who were afflicted with stone, as being less dangerous, and less painful, than the operation of being cut for the stone.

The following letter which he wrote in June, 1799, gives us a much less favourable account of the case, and as it was written to a medical friend to whom he applied for assistance, there can be no doubt of the candour of the statement, to the best of his knowledge. It was from this medical friend, upon his return to England, that I received the letter as a professional curiosity, and to show me how much all the former accounts of the General's success had been exaggerated. Being in possession of so important a document, in proof of what I have in the present volume been most anxious to explain, the mischief done by the injudicious use of instruments to the prostate gland, more especially in old age, I have felt it my duty to lay it before the public, to deter others from making similar attempts.

MY GOOD FRIEND,

I have many and many thanks to offer you for your kindness and good will towards me. My friend S——, when he was with me, saw my case, and recommended me many good things, as also friend R——, who is so kind, constantly coming to see me: both were so good as to write to you about me. I never intended to give you the least trouble, though I wished much to consult you in a case you are more versed in, and have more practice and ability than any I know in India. Friends R—— and S—— gave me the elastic bougies: before I make use of them, I must give you my case, and you will, I think, coincide with me, that the bougie cannot be of particular use to my case, as I am fully persuaded my case is not stricture, but ulceration, either to the

prostate, or so near the neck of the bladder, that it must be either the prostate gland, or the entrance of the seminal vessel; and I pass so large and thick bougie, with such ease, that I find no obstacle in the way, but a sensation of pain when the bougie passes on the sore or ulceration, and there is a copious running of matter daily coming from the ulcer, that I think, if once some new flesh, or could destroy any callosité or sinus, if any there, it would then soon cicatrise. This was my reason for having mentioned to R——, that I thought precipitate would destroy all those, and make new flesh, and then that it would soon heal, as there is above one month that a good suppuration took place. The caustick bougies, by being armed as they are, are to touch before the point on a stricture encumbering or stopping the way to the urine, and by destroying the stricture before itself open the way, and when

one is destroyed, will destroy any on the whole length of the urethra ; but as I said, I don't think, by the facility I put the bougie in, and their bigness, that there is any stricture, but ulceration. I send you herein, a muster of thickness of the bougie I introduce. I began by great deal smaller, and I am now at No. 1 ; I could put No. 2, but as I found it did not go easily, and not liking to fatigue the urethra, I did not put it in, but I am in hope to do it in a few days, and perhaps I may No. 3 ; but No. 1 I keep in night and day, and walk with it with ease. I even ventured in my carriage, and found no inconveniency. The bougies I make are hollow by twisted wires ; the stuff I make use of are of Daran's plaister, which I have by me, of the first, second, and third sort, which composition I suppose you know. I made some bougies according to Goulard, but I did not find the same effect as those of Daran, and I desisted from them. My bougies

being hollow, I make water through them, and as I found them so easy and convenient, I keep them night and day, that is to say, when I pull it off, I put in another, as it generally goes more easily directly after taking out the other. Now my good friend, I will give you how this ulceration has happened, at least to my idea of the case.

In 1770, or 1771, I had an abscess in the scrotum, of which Dr. C—— opened and cured, but as soon as it had cicatrised, I found a deep pain in the inner side, somewhere deep by the rectum, or about the perinæum, but inwardly, as not to be felt or seen any where on the outside; it appears that it had been another abscess forming, and which luckily broke out, and the matter in great quantity came through the urethra. This occasioned a sort of stoppage of urine, on which C—— recommended me bougies, and nobody could make them. He sent me the stuff to make

them of, which, I remember, was spermacetti, diachylon, and pounded antimony. These bougies, though I made them very stiff, I found great difficulty to keep them in by the pain they occasioned me, and I was obliged to abandon them. My urine, though going out slow, still was going out ; at these times, either the stones were formed or forming in the bladder, which some time occasioned me much pain and stoppage of urine ; at other times I was pretty well, though making water slowly, and by a small stream ; also I observed, that always a little matter preceded the urine, and some times, by straining after I had made water, some came out. I also found, that it was more easie to make water when laying on the side. I often used to do so. In 1774, or thereabout, as I heard that Dr. Daran was famous for curing ulcer in the urethra, I wrote to Europe, to send me some of his bougies, and the stuff to make

them in this country. When they arrived, I made use of them, and brought great deal matter out, and it was these bougies which once I shewed, when taking it from the urethra, to Dr. M——, who made me observe it was scratched by a hard substance, and by that means, thought I had either gravel or stone in the bladder, and recommended some of his physick of fixed air, which did me rather harm than good, as I think my stomach suffered by it, and I was obliged to abandon them and recover my stomach. When better, I made use of lime water and soap for about twelve months, also with little effect. At last I could not make water at all, but through a silver catheter, lent me by M——, and as I generally found the stones by the neck the bladder, unless pushing them in, it suggested me, that by making a catheter with small holes on the side, (the one of M——'s had two large

ones, one on each side) that I perhaps could break the sharp points of the stones, by passing the catheter between the stones and bladder; this by a small catheter, I could introduce it between the stones and bladder, and I succeeded in bringing many small pieces away, and after no more: but as I constantly found the stones, my good genius suggested me to make files, and by introducing them on the catheter, and with small motion, I either filed or scraped the whole stones out during about nine months. When I could not get at the stones, I injected warm water in the bladder, which I rejected, or urined out with force and large stream, and mostly always the stone came to the neck of the bladder and stopped the water; then it was my time to file again, which I did, inclining my body against the wall for to be able to keep the stones as much as I could in the position, to be able to file it often. M—— wanted

to dissuade me from proceeding to so curious mode of destroying the stone, and wrote me, that by doing so, an inflammation may happen, which would totally stop the urine, and endanger my life. This I had no fear, as often spasm of the urethra happened, and seized the file so strongly, as not to be able to move it, and no inflammation happened, though some times it brought blood, but as I saw my progress by many small pieces which I still have, beside the sand or fine sandy part, made me persevere in that mode, till I brought every piece of the stone out, and then afterwards I found myself able to walk, ride, &c. as every body else, which I had not done for many years; and I made water very well, though still always a little matter preceded the urine, and also, by straining some few drops, came out after the urine. I had been obliged to quit drinking liquor, as it brought great acidity on my

stomach, and made my urine sharper, and rather made me make water slowly by small stream, and some times drop by drop, but while my stomach in good order, I made water better, and found no inconveniency by riding hard, as many have seen me do. Last year I had a fit of gravel, which gave me much pain, and excoriated the part ulcerated. I grew well, and last year I went to Rudkund : against the show I was well ; but when my campaign was over, at Anospsheer, I was taken with a billious fever, and stoppage of urine ; I pushed on for Lucknow, making use of catheter, and warm bathing, glysters, &c. and I at last arrived at Lucknow, where I began to recover, but not perfectly well, as I could not walk without bringing a stoppage of urine, and very acute pains on the neck of the bladder, and a suppuration mixed with glaire, &c. and the pain increasing, and not able to make

water, but with a catheter, made me make use of leaden sound, which went in very well. One day, when I was wanting to draw out the sound, a spasm happened, which fixed the sound as not to be able to draw it out till the part relaxed, and you must observe, that when I wanted to make water, with a very great inclination to do it, at once a spasm happened, and I could not do it at all, but waited till the part relaxed, and by tickling the gland or head, inclination to make water happened, but it came slow, and by starts, and after making perhaps a quarter of a tea cup, a spasm happened, and I could not make any more, and all the time passing over the sore part, felt it as a stream of fire: all these suggested me to make use of Daran's bougie, of which I began by small ones, and have increased. At first they were solid, and took them out at night, and when I was to lay down, as they were painful at that

time, and when I made water, it was always with pain, and as I said before, I then was suggested to make use of hollow bougies, which I also took off when I went to lay down ; still the pain was the same, when I was making water, but particularly in the morning, being very painful, and every quarter of an hour having an inclination to do it, and making very little, till at last I resolved to keep the bougie constantly in me, and never to quit it, which I have done since about twenty days : I tried to keep it out for one day, and in the evening the pain and irritation was so great, that I was obliged to put the bougie again, and since I have not tried, to see if I could make water without such pain, and I have increased the bougie to the size I mention, No. 1, and sometimes put No. 2, and feel no pain. I sleep well, only obliged to awake every hour, when my stomach is not in good order ; otherwise, every two

hours, for to make water through the bougie. I have good appetite: I eat mostly fishes; as mullet for my dinner, and tea, with great deal milk for my breakfast. I walk to and fro, though slow: in short, I am extremely well, but that part which as I said suppurate pretty well; and I mentioned to friend R——, that I thought the border of the ulcer might be callous, and by trying in extreme small quantity of precipitate to the bougie, it may destroy the callosity, and it may heal sooner. He told me the bougie embraces the whole canal, and at last it must destroy the callosity, if any; and that he had wrote to you to wait for your better advice. He came yesterday, and brought me your letter, and the caustick bougie, which, as I said, are to destroy before itself, and not in the side, and so near the neck of the bladder, as not be seen even in the quarter of an inch from the inner side of

the bladder, which I am well acquainted of, when I empty the bladder of its urine, by pulling the hollow bougie little by little, and when the water ceases coming, the bougie is on the ulceration, and brings some drops of matter; it is also so clear, that I think some parcel of mucus mixes with the matter, and goes in the bladder. By this description I think you will coincide with me, that the caustick bougies cannot be of use, as they are to open a passage which is pretty broad opened.

I send you a drawing, and you may see the place where I think my ulcer is at + this mark; and you may after all this be better judge, being always ready to follow your better opinion, and thanking you most sincerely for it. And I am, most affectionately, my dear L——,

your's faithfully,

C. MARTIN.

Lucknoo, the 28th of June, 1799.

Since writing this I have changed my
bougie, and pass one of the bigness No. 2.
I have had it in since 10 o'clock in the
morning, now being in the evening, and
feel no inconveniency.

GENERAL Martin died in the following year, and probably did not live seven months after the letter was written, and there can be no doubt but the diseased state of the prostate gland was the cause of his death, since the pain of the urine passing over its surface was greater than he could bear ; and we must allow that he bore the repetition of pain, as well as the excess of it, better than most individuals are found to do. From his own confession of having a fit of the gravel, after he had brought the stones away, and being obliged to tickle the head of the penis before he could make a drop of water, I am strongly disposed to believe, that had the body been inspected, more than one stone would have been found in the bladder.

In his attempt to destroy the stones, in

which he persevered with great resolution, there is no doubt that he brought away much sand, and small fragments of stone ; but when it is considered that the means employed for that purpose were those, of all others, that were likely to bring on enlargement of the middle as well as lateral lobes of the prostate gland ; and that such enlargement, by preventing the stones from coming to the neck of the bladder, would prevent any remaining stone or stones from producing the usual symptoms, and would admit of his riding and using bodily exercise, as has been fully explained in the observations upon Mr. Brande's paper, it is not unfair to attribute his temporary relief to that cause, rather than to the absence of the stones ; and indeed, the moment the prostate gland enlarged, the stones were protected by it from coming in contact with his file, and therefore he could not come at them. He con-

tinued better till the increase of the disease in the prostate gland brought on fresh symptoms.

There is nothing in his own narrative, that gives the idea of his being free from considerable distress during any part of the time after the stones are stated to have been removed, and as he was allowed, by his best and most intimate friends, to shoot with a long bow upon ordinary subjects, great allowances are to be made for him upon this, which was his hobby horse, on which he was anxious to be carried down to posterity as a conspicuous character; but although he sent the account of his case in every direction, in 1791, with a wish that it should be published, so well was his character known for overstretching the truth, that nobody ever undertook it.

EXPLANATION
OF THE
PLATES,
WITH
OBSERVATIONS ON THEM.

THE same observations that formed an introduction to the Explanation of the Plates in the first volume, apply equally to those which are now given to the public. They are, in every respect, to be considered as a continuation of the same series; and by rendering it more extensive, I trust that it will have become much more complete. As it is from a knowledge of the varieties of the appearances the parts put on in this disease, that the surgeon will have the greatest advantage in managing such cases as come under his care, it is an object of the utmost consequence to the practitioner,

that he may be made acquainted with as many as can possibly come within his reach.

The drawings have, all of them, as well as those in the first volume, been made under my own eye by Mr. Clift, whose talents, both as an anatomical draftsman and an anatomist I have had many occasions to notice to the public; under his directions the engravings have been made. The preparations themselves, I have deposited in the Collection of Morbid Anatomy of the Royal College of Surgeons in Lincoln's-Inn-Fields, where also those from which the plates in the first volume were taken, have a place. That Collection is now arranged, and under the direction of the Board of Curators of the College, is opened in the most liberal manner every week in the year for one day, that those who wish to consult any part of its valuable contents, may have an opportunity of doing so.

By this means, these surgeons who reside in London have an opportunity of seeing not only the originals from which the engravings in this work are taken, but many others of equal value, and affording an equal degree of instruction to those who examine them : these I could not introduce into this work, which is limited to the cases or dissections, that have fallen more immediately under my own observation.

In giving the particular descriptions of the Plates ; wherever the nodules, which I consider to be so many distinct deposits of coagulated blood, by which the greater part of the diseased enlargement of the different lobes of the gland is produced, are particularly distinct, I have gone to some length in pointing them out.

This mode of calling the reader's attention to these nodules, I thought preferable to making numerous references to the Plates from the body of the Work.





PLATE I.

IN this Plate the circumstance that is most remarkable is, the small projection on the middle lobe, from which an hæmorrhage took place during life.

It is deserving of observation, that the whole of the enlarged middle lobe appears to have an unusually massy substantial appearance. The depth of the hollow between the two lateral lobes, sufficiently accounts for the difficulty of passing the catheter even when it was of a large size, having a considerable curve, and the impossibility of passing one of a small size, unless curved to a very great degree.

The rounded form of the middle lobe, and the rounded appearance of the sides of the lateral lobes which are opposed to one another, explain the circumstance of a

complete stoppage never in this case having occurred, for when the parts in a horizontal position of the body were not pressed upon one another, there would always in the left side be a narrow channel, along which the urine might escape, although on the opposite side there is a ridge connecting the middle and lateral lobe, which both formed an obstruction to the urine passing from the bladder, and to an instrument being introduced from the urethra ; and there are three small lacerations made in the internal membrane, on that side of the middle lobe, where the point of the instrument had caught in the ineffectual attempts to pass it.

Upon the surface of the projection from the middle lobe at the time the parts were examined recently after death, there was distinctly seen a ruptured vein, and a drop of blood was actually lying in the orifice ; but this disappeared when the parts were

put into spirit. This is the circumstance which led me to form the opinion, that the enlargement of this and the other lobes is produced by different deposits of coagulated blood in the form of nodules ; but at that time I had not made the anatomical examination of the interior structure of enlarged prostate glands, nor till this preparation had been some time hardened in spirit, and therefore was not in a state so well fitted for that purpose ; but on the cut surface of the lateral lobe the substance is distinctly seen to be made up of small nodules, similar to what will be shown in some of the other engravings from preparations that were more accurately examined in a recent state.





PLATE II.

IN this Plate the whole of the prostate gland exhibits appearances which I had before never seen; indeed, were not the form of the different lobes already well understood, this preparation would throw the whole information we had acquired into a state of confusion. The lateral lobes are elongated in a very unusual degree, and so loose in their texture, that they do not correspond in appearance with the usual solidity of the prostate gland.

The middle lobe appears to be divided into three distinct oval lobes, of very unusual length; nor is it clear whether there are not other portions which really belong to this lobe, or whether they are interstitial between it and the lateral lobes: the portion on the left side, which is very small

at that end next the bladder, and gradually enlarges till it reaches the verumontanum, and there swells out into a large nob, favours very strongly the last opinion.

The small projecting and apparently independent nodule on the right side, has not any direct connexion with either the lateral or middle lobe; it lies superficially upon the space between the two. This nodule, had it increased in size, would have become an obstruction of a very distressing kind to the passage of an instrument into the bladder, as being, in some respects, moveable upon the parts behind; the play given to the instrument would prove highly embarrassing to the operator.

When all these unusual appearances are compared with the internal structure of the lateral lobes, as exhibited in the exposed surface of the section, it makes it evident, that in this particular case, the nodules, if I may so term them, that are superficial,

and exposed on laying open the urethra, bear so nice a resemblance to those inclosed in the lateral lobes, that there can be no doubt of their being the same, both in their mode of formation, and in their texture, so that they must all be considered to be composed of extravasated blood, thrown out at very different times, and in very different quantities, varying exceedingly also in the velocity with which the blood was effused. When the parts are examined, and all these circumstances taken into consideration, it becomes very easy to explain a set of appearances so unusual, that without such a clue to the discovery, they must have remained inexplicable.

How such frequent extravasations of blood could be produced beyond what is met with in other cases, may also be accounted for, when it is known that the patient was a traveller, and had an infinitely large number of small stones, the size of

pills or small marbles in his bladder, which from the jolting exercise he underwent, must too frequently have been forced against the different parts of the prostate gland.



PLATE III.

THE preparation from which this Plate was taken, was that in which I made a particular examination of the internal structure of the enlarged parts of the different lobes of the gland, and they were in an unusually favourable state for such an investigation; they were free from inflammation, ulceration, or thickening.

The middle lobe had on its external surface a nodulated appearance, which has very much subsided; the lateral lobes also had a nodulated structure, readily distinguished through their external covering; and these internal parts admitted of a play or motion on one another, which I had never before felt: this, however, most probably arose from never before having submitted them to the same kind of examination.

I made a section of the middle lobe, cutting it longitudinally in the line of the longest axis of its apex down towards the verumontanum, and finding that it in every respect resembled the section of the lateral lobes, in which their structure is exposed to view, I laid the two cut surfaces together, and they applied so closely, that no appearance of such an incision having been made remains. This was done to preserve the nodulated appearance in the middle lobe, which is seldom so well marked upon the external surface as in this preparation; and although it is shewn in a still greater degree in Plate V., still, as that is not in the middle lobe, I was anxious to keep this, as it formed a series with the first Plate, in which there is one knob, and then again with the fifth Plate, in which there are several in the lateral lobe.

The appearance of the parts which constitute the right lateral lobe are not,

properly speaking, nodules, but lobuli. This must have arisen from the extravasated blood each time that it was thrown out, being in too large quantity to take on a rounded form, and several of these occurring in succession, they compressed one another, making them put on their present appearance; and as, when compressed, they would take that direction in which there was the least resistance, we see the ends of each of the lobuli so formed, pushing the external membrane before them, and protruding into the canal of the urethra by so many separate projections: so that in fact, when these extravasations happen in the lateral lobes, they displace the natural structure of the gland, and not only occupy its space, but dilate the cavity in which it was contained.

With respect to the middle lobe, which is in itself so small in a natural state, all the accumulations must be upon its upper

surface, next the coats of the bladder, as that is the only direction in which the nature of the parts admit of their being dilated; and thus the projection into the cavity of the bladder takes place



Wm. Cleft. del.

J. Basire sc.

PLATE IV.

IN the preparation from which this Plate was taken, the right lateral lobe of the prostate gland, sends what may almost be considered as a part distinct from itself, under the form of a separate lobe to project into the bladder. This accessory lobe has a very singular appearance, being that of a blunt cone; and it is evident, from the appearance of its surface, that the membrane by which it is covered has had an exudation of coagulable lymph thrown out upon it.

Besides this unusual addition to the right lateral lobe projecting upwards into the bladder, there is one, different indeed in form from the left lateral lobe, projecting downwards over the verumontanum to-

wards the urethra : upon the surface of this a nodulated structure is evident.

The middle lobe is by no means equal in size to either of these additions to the lateral lobes : it is squeezed out of the line of the urethra which it would naturally have occupied, and is pressed to the left side. In this situation it was defended, in a great measure, from the contraction of the neck of the bladder in the act of closing the orifice of that viscus.

It will be evident, from the appearance of these parts, what must have been the difficulty in directing an instrument along the urethra into the bladder ; and when that was not done with a very delicate hand, what mischief must ensue. Indeed the effects of such violence are so obvious, even after death, as to be seen in the engraving.

The catheter would be first obstructed by the additional portion annexed to the

left lobe, and when it had overcome that difficulty, it would come against the additional portion of the right, which being of a more solid consistence, would guide it into the bladder, but in doing so must have pressed the instrument against the third lobe, which being more tender, has the marks of the instrument still strongly impressed upon it, forming so many grooves along its surface, all the way to the cavity of the bladder.

The inner membrane of the bladder by which the middle lobe is covered, having suffered so much violence, was consequently inflamed to a high degree, and this inflammation extended over its whole surface. By this means the muscular coats became irritable, and the cavity of the bladder was reduced in its capacity, so that when the catheter was introduced, the point which abraded the surface of the middle lobe in passing, did the same to the

inner membrane of the fundus when retained in the bladder.

This circumstance accounts for the hæmorrhage mentioned in the history of the case, which coming from the posterior part of the bladder, would not occur when the bladder was contracted, which it would be after the water was drawn off, but at the time the bladder was more or less distended.





Wm. Clift. del.

J. Basire. sc.

PLATE V.

THIS Plate shows the enlargement of the right lateral lobe of the prostate gland, to a very great degree, and pressing the middle lobe away from the central line of the canal of the urethra, so as to make an accurate examination necessary before it can be determined that the bridle, going from the verumontanum to the middle lobe, does not terminate in this enlargement, which however it certainly does not. The coats of the bladder are unusually thin, consequently there are more sacculi between the fasciculi of muscular fibres than are commonly met with.

This peculiar enlargement of the right lateral lobe, and its having been in contact with the side of the middle lobe, but torn from it by a groove made with the point of

the catheter, explains two circumstances that occurred during life ; the one, that the most usual symptom belonging to the diseased enlargement of this gland, suppression of urine, never came on till a short time before the patient's death ; the other, that there was no difficulty in passing a catheter in any of the stages of the disease directly along the middle line of the urethra, so that there were not the usual guides to distinguish the nature of the complaint ; and a new set of symptoms brought on by this peculiarity was produced. These were an involuntary passing of the water, or leakage, even when there was little urine in the bladder.

The pouch on the posterior part of the bladder was at one time nearly the only cavity which retained water.

In this preparation, more than any other, the nodulated appearance is remarkably distinct, even through the external

covering of the tumor projecting from the right lateral lobe. It evidently contains more than eight or ten of these distinct nodules ; so that from the view which I have given of their formation, we are enabled to trace the progress of the lobe's enlargement, and to count the number of attacks of hemorrhage that had previously taken place to bring it to its present size. We have also here several independent nodules, if I may use the expression, which were probably formed by blood being extravasated in the cellular membrane of the parts in contact with the gland, and forming tumors wherever the parts admitted of a sufficient degree of distention.

This Plate, probably better than any of the others, confirms, in many particulars, the opinion of these enlargements being produced by a succession of extravasations of blood.





Wm. Cleft, del.

J. Baure, sc.

PLATE VI.

IN this Plate there are several circumstances that are very remarkable: one of these is that the middle lobe, although in an early stage of the disease it had been sufficiently enlarged to prevent the bladder from emptying itself, yet the continuance of the disease for many years longer, does not seem to have produced the smallest additional increase. This circumstance I have endeavoured to explain in giving the history of the case.

Another circumstance which is highly deserving of notice is, that the unskilful management of the catheter is capable of doing mischief to a degree that could not have been calculated, without the patient being at the time aware how much the parts had been injured, or any-symptoms

being at the time produced, which it is natural to suppose would immediately follow so great an extent of laceration of the internal membrane of the urethra, and of the membrane which lines that part of the canal which is formed by the prostate gland.

It is however to be understood, that one half of the local mischief committed with something like impunity upon this urethra, would, in many patients of a more delicate constitution, and a more irritable habit of body, have been followed by symptoms that would have proved fatal.

In this individual case, it is not to be doubted, that many attacks of irritation upon the bowels, and many paroxysms of fever attributed to the state of the bowels, were brought on by the mischief the urethra had sustained; but so fractious was the temper of the patient, and so little amiable his disposition at all times, that nothing that happened to him connected

with his complaint was, I believe, during his life fairly appreciated.

The fever which immediately preceded his death, I have now no doubt was entirely symptomatic of an abscess in the substance of the prostate gland, since I have in other cases found the same kind of fever come on and terminate fatally, produced by the same cause.

The engraving, however, while it shows how much mischief has been done by trusting instruments in the hands of unskilful persons, will become a caution to those in future who require the use of the catheter, not to employ persons who are incompetent to the management of it.





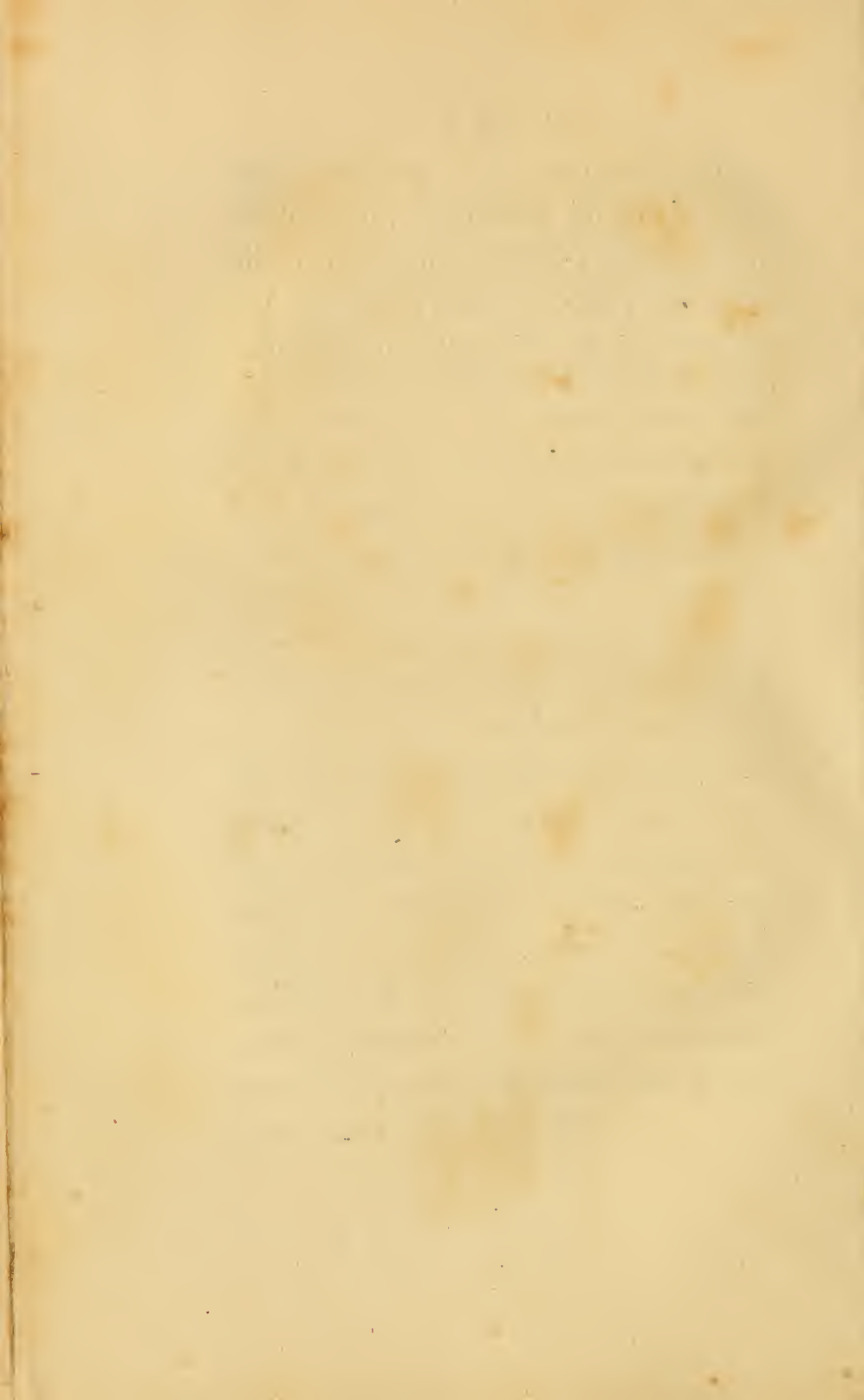
PLATE VII.

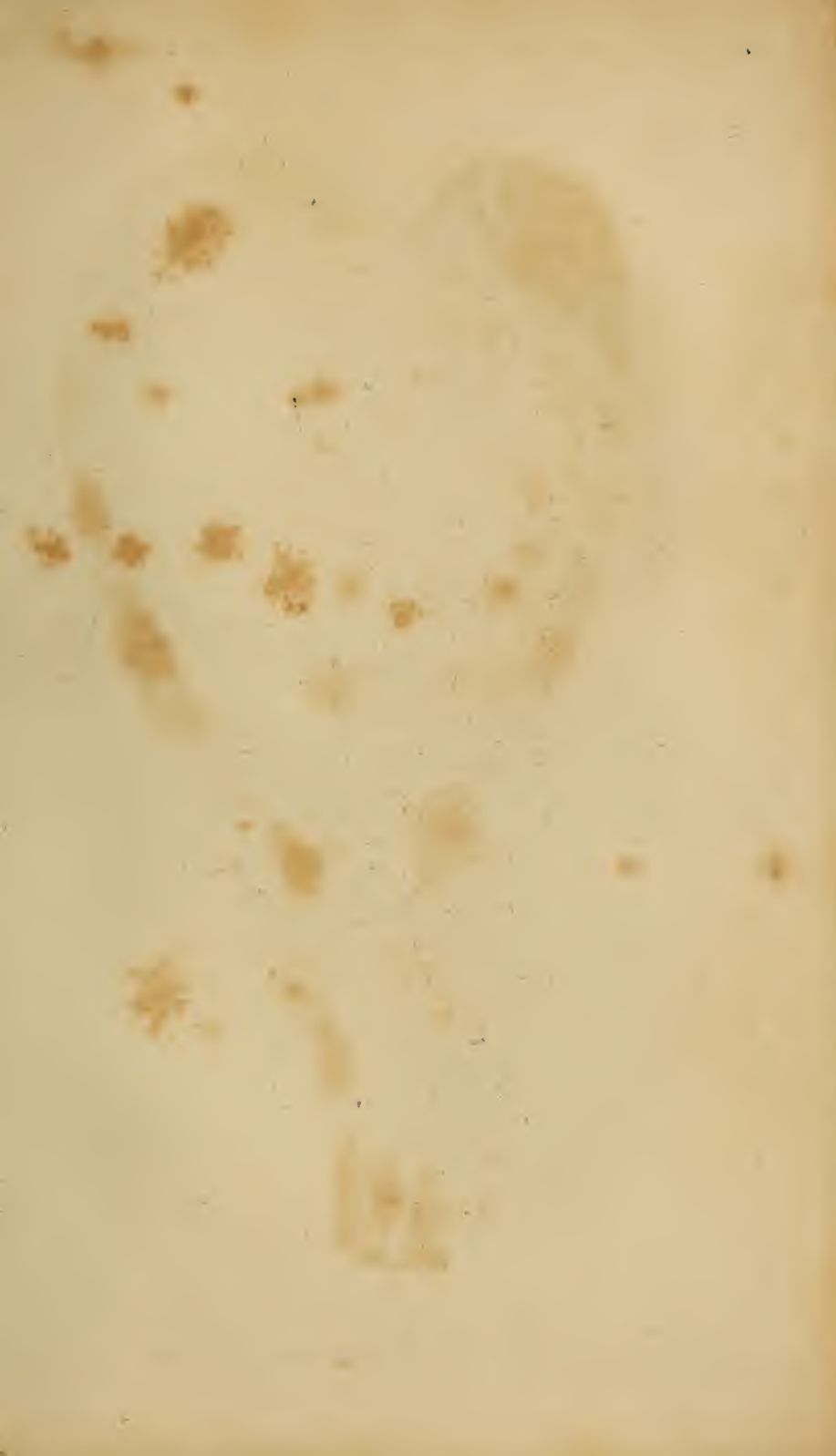
IN this Plate, the ravages committed by the unskilful and repeated use of the catheter are very conspicuous. The middle lobe of the prostate gland is considerably enlarged, so as to make it absolutely necessary that a catheter should be used, and when once passed, it should have been retained in the bladder; but it may be naturally asked, on looking at the internal membrane of that viscus, how any instrument, however soft in its nature, could be retained there? It is however to be remembered, that the appearances now exhibited in that viscus, make no part of the disease under which the patient laboured; they were produced by the continuation of the inflammation that had its origin in the prostate portion of the urethra and the

membrane of the bladder that covered the middle lobe of the prostate gland, which was carried before it in its progressive enlargement.

It is probable, that in this particular case, these membranes were more tender than in ordinary cases, and therefore suffered in a greater degree from the same quantity of violence which, in more indolent habits, would have produced little or no disturbance. It is however a striking instance in illustration of what I have advanced in favour of leaving the catheter in the bladder from the very beginning, since in this instance, if that had been done, the patient's life might have been prolonged and rendered comfortable; whereas the very methods employed to relieve his disease, by their violence, brought on a more miserable existence, and a more distressing termination to his sufferings, than the original disease could have done.

The exudation of coagulable lymph from the internal membrane of the bladder, is the previous step to incrustation, the flakes that project forming a basis for the uric acid and the phosphates to crystallize upon.







M. C. del.

J. Basire sc.

PLATE VIII.

IN this Plate there is a blind pouch of no common kind, just before the middle lobe of the prostate gland. It is so placed as almost entirely to preclude the possibility of passing an instrument into the bladder, as there are no means by which the point of it could avoid going into the cavity. At first I was led to doubt whether it was a natural malformation, or the beginning of a false passage made by the use of bougies, since that point could not readily be determined, as there was no history to give us any information. The blind pouch was discovered by accident, the patient having at the time of his death no disease in these organs, and the body was examined on account of complaints of a very different kind. In

examining the parts attentively, the appearance they now put on is such as could not well have happened in a malformation; for the *verumontanum* is entirely removed from its natural situation, and carried forward to the very bottom of the sac under the middle lobe, and one of the orifices at the *caput gallinaginis* is now seen there, and the middle lobe is made to point forwards towards the urethra, not apparently enlarged, but pushed upwards, and the two lateral lobes at the same time forced aside below it. In proof that this change of structure has been produced by bougies, there is an appearance in the urethra, shewing that the canal had been liable to inflammation at the usual situation of structure; and the orifices of both ureters are larger than usual, but more particularly the right, which probably happened during occasional attacks of retention of urine.

I have thought it right to place the

appearances before the public, that where the difficulties which must naturally arise from such a sac having been formed occur, it may be known, that this source of obstruction to the passing of an instrument into the bladder has been met with before, and therefore it will be necessary for the surgeon to enquire whether the patient had been in the habit of passing bougies in the earlier part of his life.





Wm Blyth del.

J. Basire sc.

PLATE IX.

IN this Plate there is not only represented an enlargement of the lateral lobes and of the middle lobe of the prostate gland, but all the parts connected with the vesiculæ seminales behind were thickened and formed into one mass, so that the middle lobe is thrown more backward than it usually is, and a complete barrier or ridge is formed as far back as the openings of the ureters, and these are forced up to the top of the ridge. In this manner a regular basin is met with behind the ridge, which would appear to have been the receptacle of a calculus, whose weight had moulded it into its present form. This however was not the case, the cavity depending entirely for its present appearance on the unusual thickening of the parts behind the prostate gland.

This cavity most probably performed the office of the urinary bladder, no other part of the viscus retaining any capacity for doing so.





Wm. Pliet. del.

J. B. R. sculp.

PLATE X.

THIS Plate represents a remarkable specimen of vascular fungous excrescence from the lateral part of the internal membrane of the bladder. It is situated nearly on a line with the entrance of the right ureter. It is necessary to mention, that the engraving is taken from a preparation in which the anterior part of the bladder is alone preserved, the posterior having been cut off, that the diseased structure might be more distinctly seen. This Plate has a place in the present Work, that the exact part of the bladder from which the hæmorrhage, that frequently took place during the patient's life, might be accurately pointed out, as by this means it will be seen that the blood must mix with whatever urine was contained in the

bladder, before it could be discharged from the body.

From the delicacy of the fibres of which the excrescence is composed, and their great vascularity, it is obvious, that very slight circumstances would produce bloody urine, and the parts might readily have their vessels closed as soon as they were completely unloaded. I have had frequently patients under my care, subject to hæmorrhage from the bladder, but have had no opportunity, in any of them, of knowing what part the blood came from. I have reason to suspect that the diseased appearances exhibited in this Plate, existed in a greater or less degree in some of these cases, although it was never detected.

The delicacy of the structure of this excrescence is beyond what is usually met with, and I do not know of any instance upon record, from the inner membrane of the bladder, which in that respect can be com-

pared with it. This may arise from the circumstance of such fungous excrescences being liable to be encrusted in a very early period of their formation, and in this instance there was no disposition in the urine to deposit calculous matter, and produce that effect.



